



AMERICAN ARTISAN

RESIDENTIAL AIR CONDITIONING
WARM AIR HEATING--SHEET METAL CONTRACTING

AUGUST, 1946

Production Is Only Way to Stop Inflation

Catalytic Oils

Short on Profit—Try Stainless

Page 53

Page 68

Page 82

MR. DEALER: With thousands of new homes under construction and many old ones needing furnace pipe repairs, all indications point to the biggest season you ever had.



C & L Lamneck Galvanized Furnace Pipe and Fittings are being prefabricated as fast as steel becomes available. Yes, jobbers are getting top quality C & L Lamneck products again—carefully and soundly engineered to insure dependable, long life performance in any and all standard types of gravity warm air systems.

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The new 1946 simplified catalog is ready for you. Write for your copy.

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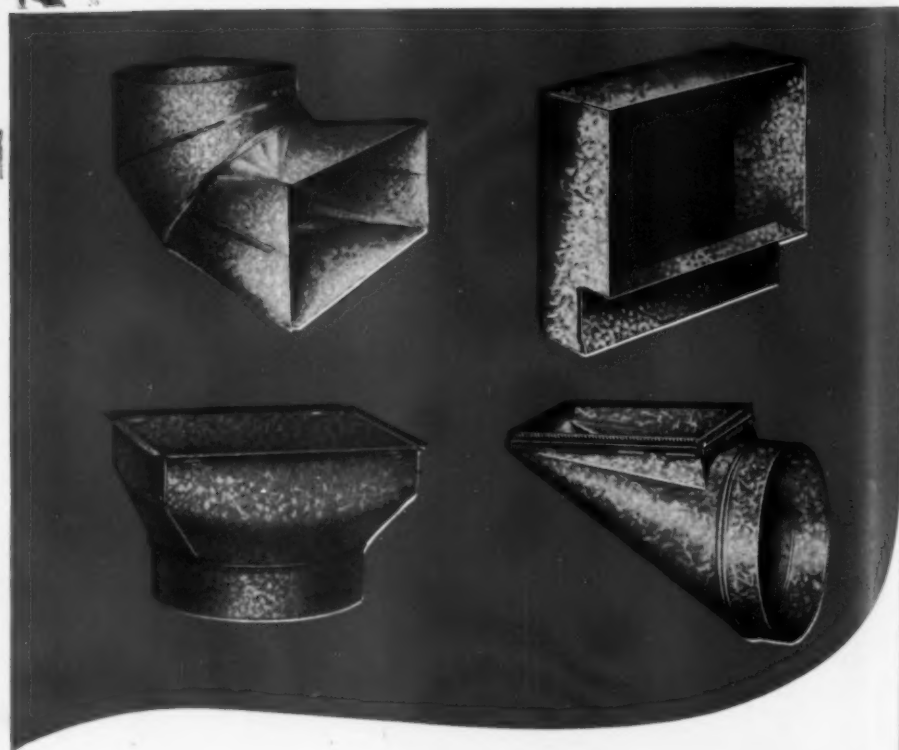
C & L Blow Torches, Fire Pots

C & L Hoffman Water Heaters

Monarch builders finish hardware, panic exit devices

Buckeye grain bins, corn cribs

Silver Shield Silos

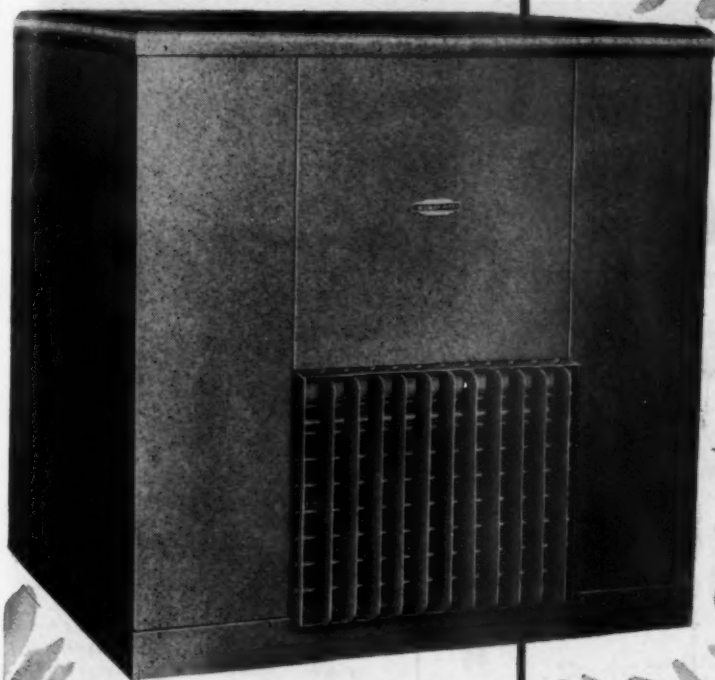


Lamneck

**FURNACE PIPE
AND FITTINGS**

CLAYTON & LAMBERT MFG. CO.

Sales Office, Louisville 10, Ky. ★ Factory, Middletown, Ohio



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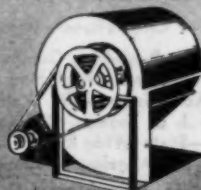
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SHEET METALS **Warm-Air Heating**

Covering All Activities in Residential Air Conditioning and Small Commercial Cooling, Warm Air Heating, Sheet Metal Contracting and Fabricating

ARTISAN

In This Issue

J. D. Wilder, Editor

J. J. McCullough, Associate Editor A. A. Kennedy, Assistant Editor

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IN this issue AMERICAN ARTISAN launches a new department—The Editor's Notebook, page 6. It is hoped that these four Notebook pages will be somewhat different from the usual technical and management articles which, for so many years, have made up the bulk of AA's editorial content.

The idea for these pages stems from the many and varied letters, speeches, articles, releases, inquiries which, day after day, cross an editor's desk. Much of the information contained in this material is humorous, worthy of thought, indicative of trends in industry, but not of sufficient completeness to constitute a regular article.

But because the editors find much of this material interesting, perhaps readers will also find it worth the few moments it takes to read the items. Readers are invited to contribute and discuss and suggest.

Now that OPA has been reinstated (after the few days lapse) our industry finds itself back under controls. It will take several weeks to finally determine our status and our new liberties. Until regulations are clarified, no comprehensive analysis can be published.

But in the News Summary of this issue readers will find a number of items in which temporary rulings or statements have been issued by the OPA.

The editors would like to call attention to one article—Catalytic Oils—because this subject is so frequently under discussion and because the author is so widely recognized as an authority.

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Founded 1880

AUGUST, 1946

Volume 115, No. 8



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1946



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OIL



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The Editor's NOTE BOOK

Wage Raises in '47

Tuck this thought in the back of your mind for 1947: The big unions (CIO and AFL) have mostly been appeased, but for the time being only. These unions believe they already have government's support for a total wage increase of 30 per cent. In 1946 they have obtained or will get about 18 per cent. That leaves 12 per cent to get in 1947. In some cases the stage is being set—even before the ink is dry on the 1946 contract for 18 per cent.

And worse—these wage increases will, naturally, raise the selling price of the item produced, so living costs will go up all this year. By 1947 increased costs of living will have eaten up some of the 18 per cent secured this year—so by 1947 there will be all the ground-work laid for more wage increases even beyond the 12 per cent now charted.

This, in brief, is the spiral we are now climbing.

Comments on Catalytic Oil

American Artisan:

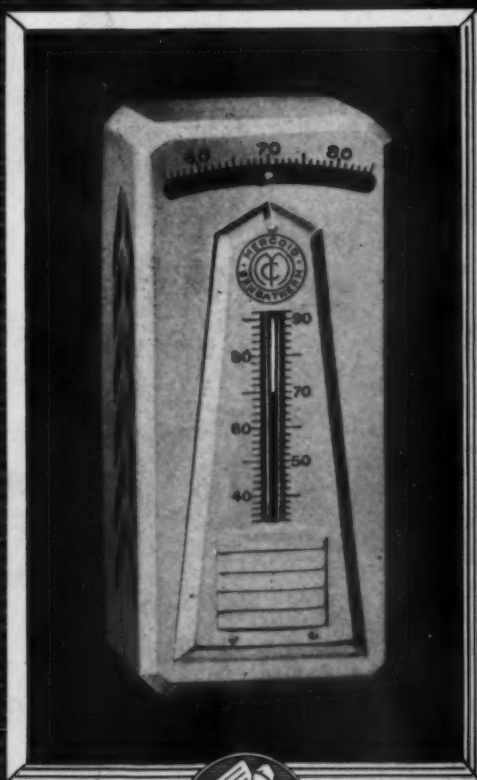
This letter relates to the article "Catalytic Oils" by Henry Aronson in a recent issue.

As you are probably aware, fuel oil specifications are currently being investigated by the A.S.T.M. Committee on Prototype Fuel Oils. Oil burner manufacturers have recently completed a series of tests with different types and percentages of cracked oil to determine the type of operation which might be expected from this fuel.

In addition to some of the problems outlined by Mr. Aronson there is, I feel, one very basic problem of economics. Starting with the fact that many large companies have installed, as a result of war demand, expensive "cat" cracking equipment, we see the reason for the possible desire of these refiners to promote the use of "cat" cracked fuel oil. The question of economy of operation of this "cat" oil in various equipment seems to be a point of argument. I understand that one of the major diesel manufacturers has pointed out that diesel equipment can be built which will satisfactorily use "cat" cracked distillate but that his company is loathe to attempt to do this without a better understanding of the probable cost of this fuel.

We then come to the question of whether distillate resulting from the "cat" cracking process will be substantially lower in cost than straight run distillate because in itself it will become a less desirable by-product in the event that most gasoline of the future is produced by the "cat" cracking process.

There seems to be little doubt as to the desirability of straight run fuels for use with vaporizing pot type burners. In view of the size of this demand it seems quite probable that many refiners will find it profitable to produce a straight run



A Mercoid Product

The Mercoid Sensatherm is emerging in this post-war period unexcelled in its simple beauty, with its appealing lifetime lustrous natural metallic finish. There is no lacquer coating to become dull, nor can it ever tarnish. It holds its newness in appearance indefinitely. No polishing or scrubbing is ever necessary—simply wipe off any accumulated dust or dirt with a cloth,

And speaking of performance, this instrument still remains unmatched for its even room temperature control. There are many factors in its design and construction contributing to its long life and positive operation, particularly the hermetically sealed mercury switch. Summing up its appearance and performance, it is truly the aristocrat among thermostats.

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The Editor's NOTE BOOK

distillate. Contact with a large number of refiners leaves the impression that it is possible many of these refiners are quietly preparing to supply the pot type burner market with straight run fuel but are not particularly advertising this intention at this time. As Mr. Aronson points out, the straight run distillate by-product of the past may become the product of major importance in the future, not so much because of the total gallonage involved, but rather because of the profit possible.

I think the problems of economics appear to be the most controlling factor in the question of the availability of suitable fuel oils in the future.

Many burner manufacturers are currently doing a great deal of research to develop a burner which will, with complete satisfaction, burn cracked fuels. However, to do this job completely presents many difficult problems. It is not simply a matter of providing air, for this alone, while burning the fuel more completely, results in a lowering of the efficiency. The basic problem of burning cracked fuels can best be seen from a chemical analysis of these fuels, and while it certainly is not advisable at this time to predict such results are impossible, certainly it can be said that difficulties will be encountered. This, coupled with the necessity of a continued supply of straight run distillate for those many hundred thousands of burners already in use indicates the reason for the continued demand for a straight run fuel.

S. P. Campbell,
Wichita, Kan.

Agencies Die, But Job-holders Stay

Congressmen, worried over the huge national debt, saw rays of hope when some of the Federal emergency war agencies began disappearing when there was no more war to justify them.

The agencies disappeared—but the army of Federal employees didn't. They simply were attached to other Government payrolls.

The War Manpower Commission had 27,839 on the payroll. It was scrapped. But, according to figures of the Congressional Joint Committee on Reduction of Non-essential Federal Expenditures the Byrd committee), 26,076 of the defunct WMC employees promptly were attached to the payrolls of the Labor Dept. and the Federal Security Agency.

The War Labor Board was axed. But 3,546 of its 3,844 employees later turned up in the Labor Dept.

The Office of War Information died—of its 7,989 employees 7,383 got jobs in the State Dept. and 141 in the Budget Bureau.

John Citizen is still paying the salaries of 2,450,003 civilian employees in the U. S., and 763,190 outside the country.

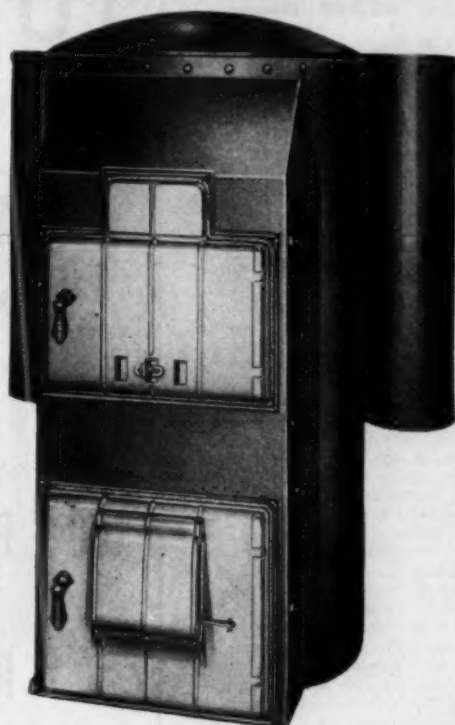
A MAJOR IMPROVEMENT in Furnace Design and Construction

THE NEW WEIR "U" SERIES STEEL FURNACE with

Integral Heating Element *

*Patent applied for

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- 4 Fire entirely enclosed in refractory lined steel combustion chamber.
- 5 Modern, streamlined front for eye-appeal that makes sales easy.
- 6 IN FULL PRODUCTION NOW—available for prompt shipment.



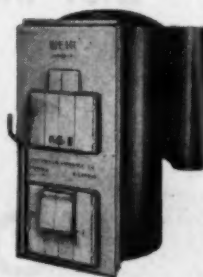
Here's the revolutionary Integral Heating Element of the WEIR "U" Series furnace. No cumbersome front casting. Drum, pouch, feed and ash throats, and door seats are *one piece*, riveted and welded for *permanent* tightness. Gives the cleanest, most healthful warmth possible.

The WEIR "U" Series incorporates all the famous WEIR features. This new WEIR is easier to install. Its modern, streamlined appearance makes sales easy—its unflinching performance makes owners enthusiastic. And—the new WEIR is AVAILABLE NOW. Send for detailed information TODAY!

EASY TO INSTALL



The large illustration above shows the combustion drum as you receive it. Doors are attached. Doors and door seats are surface ground for perfect fit. Pressed steel front slips into position and is fastened firmly. Casing hooks into front in air-tight seal — keeps basement dirt out. No bolts or screws.



The Integral Heating Element design and construction, besides making the new WEIR *positively, permanently* leakproof, completely encloses the fire in heavy refractory-lined steel. Pressed steel front is not exposed to the fire. Thoroughly tested and proved, the WEIR "U" Series sets new standards of cleanliness, efficiency and ease of installation.



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The Editor's NOTE BOOK

Higgins' \$3,000 House

Andrew J. Higgins, Jr., the New Orleans swashbuckler who was once called America's No. 1 "boat-builder, money-maker and hoop-la artist," has announced his solution to the housing problem—a porcelain-enamelled steel house costing as little as \$3,000.

A product of Higgins' prized research department, which he once described as "they're nuts—they're geniuses," the new material is sheet steel with which porcelain enamel is fused at 1,750 degrees of heat. It is trade-marked, he said, as Thermo-namel. Interlocking sheets of the material have been designed to form Thermo-namel units which can be shipped to a building site knocked down.

The unit is erected on a standard foundation, two sheets of the material spaced apart forming a wall. When the walls are up, including windows, doors and ceilings, a specially treated Portland cement compound—Thermo-con—is poured between the two Thermo-namel sheets.

"It makes a monolithic mass," says Higgins, "tornado-proof, earthquake-proof, dust-proof, vermin-proof, and fireproof. It requires no maintenance. The walls are virtually proof against temperature changes, due to the nonconductive nature of the Thermo-con filler."

The material may be used in any floor plan or color scheme worked out by the architect.

"Right now, we're interested in housing the veterans," he says. "The papers are full of protests from architects, builders and contractors that they can't build a proper home for \$6,000. But this beautiful home can be shipped in a package for \$3,000 f.o.b. New Orleans."

The \$3,000, he said, would buy a five-room dwelling with 1,000 square feet of floor space. A crew of eight men could erect the house in three days.

Leave Fireplace Open

American Artisan:

For many years I have been a reader of your magazine and much interested in your various articles on heating. However, to my way of thinking much more can be said than has been to date.

For instance, it should be the rule to insulate all new houses and to in some way condition the air in them. It is well known that in cold weather only a limited amount of moisture can be introduced, the amount will be to a point at which moisture will condense on the windows.

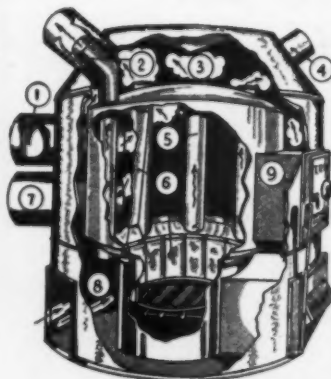
In the case of double windows, enough moisture can be introduced under this rule to cause serious trouble in the house insulation, especially if it is a good job of insulation and in a well built house.

In most articles the point is stressed that much heat escapes



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TUBERATOR



100% PRIMARY HEATING SURFACE

AND

REVOLVING ASH PIT

FOR

HIGH EFFICIENCY

AND

EASY INSTALLATION

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WRITE DEPT.

A-846

WHEELING FURNACE CORPORATION

MARTINS FERRY, OHIO

The Editor's NOTE BOOK

up fire-place chimneys so these should be closed. Now to my way of thinking, this is wrong as one sure way to stop dangerous condensation of moisture in the insulated walls and ceiling is to have a movement of air from the outdoors into the house. By leaving fireplaces open and having various other vents we create a small vacuum effect which will stop the moisture going into the insulation.

In my own house I have a large opening over the kitchen stove into a chimney with a blower fan in this duct to use for cooling or ventilation. I also have vents from the bathroom into chimneys and the fire place is open all the time.

To provide makeup air for this loss, I have a pane of glass out of a cellar window with a curtain flat over it, but allowing air to enter quite freely. My house is well insulated and double windowed so the heat loss is at a minimum.

Contrary to what one might think, the extra cost of oil fuel does not seem to be much and the air in the house is free of odors common to a tight house in winter time.

W. A. Mohr.
Bridgetown, Canada

Needs Data on Grain Elevator

American Artisan:

Do you have any information on sizes, capacities and construction detail of cyclone grain elevators?

Friend-Pike Sheet Metal &
Roofing Co., Sioux City, Iowa.

Gentlemen:

We have looked in various books on "blow-piping" in our library, and find little on the subject of "cyclone grain elevators." We assume by this term you mean a grain unloading system, comprising a flexible nozzle placed in the grain; a separator and a high-vacuum blower. In operation, the blower pulls the air out of the separator and this in turn pulls the air and the grain through the flexible nozzle. When the grain reaches the separator, the grain drops out and the air continues into the blower.

On pages 328 and 329 of the book "Air Conditioning and Engineering" published by American Blower Corporation, Detroit, Michigan, there are four simple sketches and a brief explanation of one of these systems. Very little is given in the way of detail. In case you want the information and have no other way of getting it, we will be glad to photostat these two pages at a cost of a few dollars and send the photostats to you.

American Artisan

SPEEDS UP INSTALLATION CUTS DOWN COSTS

**WHITE-RODGERS
Automatic Controls
Give You . . .
EASIER INSTALLATION,
cut down unnecessary
CALL-BACKS!**

When installation and service time goes up, profits go down. That's why heating men everywhere, from manufacturers to installers, from contractors to service men, are specifying White-Rodgers controls for every type of installation.

These attractive, accurate and dependable controls actually require less installation time, and are easier to hook up and adjust to the particular job. Also, their reliable performance in operation reduces service calls which further helps you make a profit. Always specify White-Rodgers controls! Send today for heating catalog and installation data.



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Controls for Refrigeration

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Pancake Register

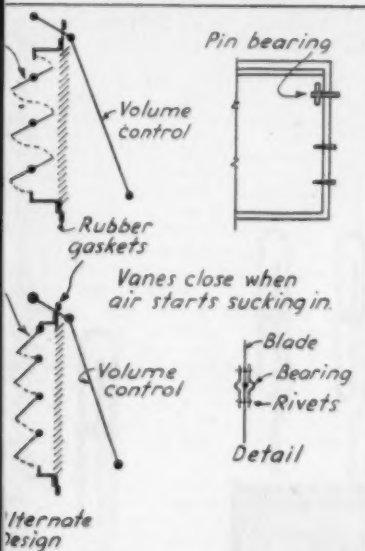
Dear Sir:

I believe that there is a definite market for 5 in., 6 in. and 8 in. by 4 in. pancake registers equipped with two or three aluminum or light metal self-closing vanes on the front.

On every air conditioning job we have installed there have been at least two such pancake registers required in the basement duct or the plenum to heat the laundry or shop or playroom.

If these registers stay open when the fan shuts off, the warm cellar air is drawn in along with any basement odors or smoke and is delivered by gravity to the upstairs rooms. Also the basement drops 10 degrees in five minutes.

In a number of instances, we have run stacks down from the



duct and installed ordinary registers at the basement floor level. This helps, but is considerably more expensive and not too neat or satisfactory.

My own job at home requires one of each of the sizes I suggested. Being unable to locate any such register on the market, I made one with a single 8 x 5 in. shutter, but the pressure only opens it half way. It might be advantageous to design this register with a 3-position shutter on the back so that it could cut into the air stream when placed on either side of the duct or on the plenum, the way some of the old pancake registers were made so that they could be used as either 10x12 in. or 12x10 in.

George Nichols, Jr.
Buffalo, N. Y.

Elmer Plans Own School

American Artisan:

With the return of veterans in our shops, we find in our small

Make an Extra Profit on every Furnace "Cleaning Job"



Install the Viking Automatic Furnace Pan Filler

COMPLETE OUTFIT IN ONE HANDY KIT . . .



All the necessary parts and fittings for a complete installation including 6 feet flexible copper tubing, saddle valve, copper float and the Viking Top Seat Float Valve.

INSTALLS
IN LESS
THAN
30 MINUTES

Make an Extra \$5 Bill on every Cleaning or Re-setting job. Costs you only \$2.50 for the complete kit. Easily sold; quickly installed . . . carry one with you on every call . . . easily worth \$7.50 to any homeowner.

Fill out and mail the order blank today . . .

ONLY YOUR REGULAR TOOLS NEEDED

Drill a $\frac{1}{8}$ " hole in any convenient water line and attach the saddle valve, drill a $\frac{3}{8}$ " hole in the water pan and install the float valve, connect the saddle valve and the float valve with the copper tubing and the installation is complete.



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Gentlemen: Please ship at once

VIKING AUTOMATIC FURNACE PAN KITS at \$2.50

NAME _____

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ZONE _____

STATE _____

Bill thru my jobber ☐ Check enclosed ☐

My jobber is _____

We will ship from our nearest jobbers stock, if no preference is shown.

town our school system will not set up a course of further education for the veteran unless there are 8 or more interested in the one course.

We also find that the advanced veteran or apprentice, who has had say two years' shop and experience, is forced to drop back to become a beginner and also start with beginners' wages. This means they get lower wages than when they enlisted.

We are badly in need of trained men in our industry, but all I hear is schools for the "dealer." This is, of course, important, but I believe we will progress faster and get better installations if we train the apprentice and mechanic to help the dealer do a better job of installing. We also need a system of training which will be universal, so when a mechanic moves from place to place he is worth his money wherever he goes.

I understand oil companies are about to add service to their cost of fuel oil because the customer finds it so difficult to get service on his oil burner. Should they put service men in the field, they will start condemning the equipment the customer owns and try to sell their own line. In order for the dealer to sell his merchandise he must be able to service as well as install, and here is where he needs trained mechanics by the dozen when heating season comes along.

I believe publicity is needed to encourage young men to get into our business. The future and the wages are certainly attractive at this time. Of course we have to work with the labor unions in most cities, but I am sure they are as anxious to have members as we are to have mechanics, so that a mutual agreement could be reached on this point.

In Cleveland at the National Warm Air meeting I tried to impress the need for apprentice training and mechanics' advanced training along with the dealer training, but I was not able to put the idea across. The manufacturer and dealer seem to be a little selfish on this point and seem to want to leave it up to the individual dealer to train his own men.

So in our shop we have decided to have our own school. We are going to paint two sheets of iron with blackboard paint; on one we will have a complete layout for some sheet metal object and leave this on the blackboard for a week. The other blackboard will be used to practice on during lunch hour or after working hours. We will have samples of good savestrough laps and poor, as well as good soldering and poor. For heating and air conditioning, I am now breaking down the association manuals that will be most useful to a mechanic, also the Yardstick. I am buying a sufficient number of these books so that each man will have one file in a three-ring binder to carry with him for ready reference if necessary.

Elmer G. Schartow.
Midland, Mich.

*Any Furnace Heats
Air Only in Proportion
to its Heating
Surfaces!*



VICTOR FINS

TABLE-TOP DEMONSTRATOR



This is the "Hottest" furnace demonstration in the industry! Two identical thermometers show, right before your prospect's eyes, the actual difference in heat which Victor Fins make! It's dramatic. It's fool-proof and it's honest! This table-top demonstrator closes sales for you—in the home or in the office.

HEATS MORE AIR FASTER

Air to be heated must rub on a hot surface. Victor's patented Heat Radiating FINS provide many additional square feet of heating surface. Even in the 24-inch furnace, Victor Fins furnish an additional 57.5 square feet of hot metal for the air to rub on. We say additional because this is in addition to a generous sized radiator with long, more effective fire travel. When you sell Victors you are selling more heat for less money—that makes sales easier.

Plan Now to Handle VICTORS

Now is the time to get your name in for a Victor Dealership even though, due to present production conditions, new dealerships may not be immediately available. Investigate Victors NOW! Study this quality line, famous since 1890. See for yourself how its faster selling sales points and business building features of permanent satisfaction will make you more money. It's the furnace with the patented Heat Radiating FINS!

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The Editor's NOTE BOOK

Louisville Wage Agreement

Perhaps you will be interested in learning that the Wage Stabilization Board has approved wage rates in Louisville for 19 trade unions as per our Builders Exchange recommendations. We expect an agreement with the Building Trades Council similar, at least, to the Seattle Plan. This leaves the bricklayers (not a member of the Trade Council), the painters, Compo-roofers, slate and tile roofers, and marble setters to carry their demands to the Wage Stabilization Board themselves, faced with a protest by the A.G.C. and the Builders Exchange, to any advance beyond those we proposed. This covers Louisville, Jefferson County, Ky., Floyd and Clark Counties, Indiana, in which are New Albany and Jeffersonville.

A Louisville general contractor has a job in New Albany on which there is a New Albany brick contractor paying brick layers \$1.80 per hour. We filed a protest with the Board, who immediately notified the contractor to pay no more than \$1.65, otherwise he would be a violator. The Board notified us by telephone that after talking to the brick contractor it was their opinion he was unaware that he was doing other than he should, and they excused him on his promise to reduce the pay at once. We are rather encouraged at the prompt action of the Board.

J. E. Merrick,
Louisville, Ky.

Best Engineering Manual

Dear Sirs:

Would you kindly send me the shortest method you know on forced air heating, Btu loss, air change, etc.? Every one I have is long, and I think there should be a more simple one.

Also, what is the average temperature drop from unit to register?

W. T. McWilliams,
West Allis, Wisc.

Dear Mr. McWilliams:

The newest and best method for figuring forced warm air heating is the "Code and Manual for the Design and Installation of Warm Air Winter Air Conditioning Systems." You can get a copy by sending fifty cents to Mr. George Boeddener, Managing Director, National Warm Air Heating & Air Conditioning Association, 145 Public Square, Cleveland 14, Ohio.

Everything is precalculated in this new code. You do not need to select the register temperature; you do not need to consider temperature drop; nor velocities; nor resistances—all of these factors have been calculated and are automatically accounted for when you select the sizes, etc., from the tables in the manual.

American Artisan.



SELL IMPORTANT FUEL SAVINGS, NEW COMFORT TO ALL FURNACE USERS

You'll make many new friends—plus new sales and profits—by urging every furnace user, new or old—to have a new A-P DEPENDABLE Heat Regulator Set installed NOW. You'll be showing them how to save scarce fuel next winter, how to stretch short supplies for greater warmth, enjoy more uniform and healthful temperatures, greater comfort and time-saving convenience.



DEPENDABLE HEAT REGULATOR SET



The A-P Heat Regulator Set is available for steam, hot water, or warm air coal-fired furnaces. It is complete with a modern wall Thermostat, Limit Control, Damper Regulator, Transformer, and complete installation kit—pulleys, screws, conductor cable, staples, chain, and full instructions. Every unit is precision built for years of fuel-saving service—typical of all A-P DEPENDABLE Products.

WIRE OR WRITE TODAY for complete details — and for SALES HELPS: Display cards, colored presentation books, consumer folders, newspaper ad mats.



AUTOMATIC PRODUCTS COMPANY

2470 North Thirty-Second Street, Milwaukee 10, Wisconsin

DEPENDABLE Controls

FOR HEATING • AIR CONDITIONING • REFRIGERATION

The Editor's NOTE BOOK

OPA Speed

A company that wanted to make door knobs for new houses submitted this time card showing OPA's speed in reaching a decision.

May 20, 1945: Asked local OPA what to do about prices.

May 21: Visited local OPA, got forms and instructions.

June 12: Mailed forms and exhibits to Washington.

July 9: Asked local OPA if there had been action.

July 11: Washington OPA wired, "Unable to determine jurisdiction."

July 31: Washington OPA asked for photos and samples.

Aug. 21: Photos and samples sent to Washington.

Sept. 3: Wired Washington OPA, "Production stopped, workers laid off."

Sept. 7: Washington OPA wired, "Expect decision next week."

Sept. 13: Washington OPA phoned: "What is Kirksite? Send samples."

Sept. 15: Samples sent to Washington OPA.

Sept. 20: Wired Washington OPA, "Can we do anything to expedite?"

Sept. 28: Local OPA advised, "Keep pressing Washington."

Oct. 1: Local OPA asked if Washington had acted; wired Washington.

Oct. 3: Local OPA announced Washington OPA had reached decision—a price exactly covering cost of materials and plating, about half competitors' price.

Oct. 12: Washington OPA denied appeal for relief.

P.S.—Door knobs not being made.

Price of Duct Work

Dear Sir:

We are interested in securing a book similar to your "Pattern Development for Air Conditioning Fittings," which will give the approximate prices for fabricating all types, sizes and weights of ducts.

Air Engineers, Inc.,
Birmingham, Ala.

Gentlemen:

There is no such book we know of, but we are inclosing a copy of duct estimating tables which gives the time required to fabricate straight sections and fittings. Also sizes and weights of ducts so, from this information, you should be able to estimate costs pretty closely.

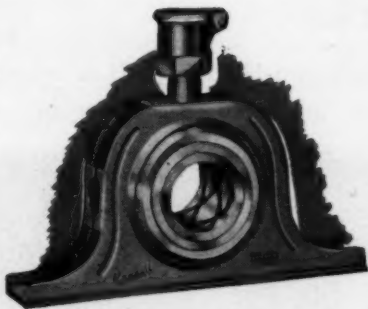
Some contractors say these particular tables are very accurate. Such contractors generally are the more efficient shops. Less efficient contractors say the tables do not allow sufficient time. A few contractors have criticized the tables because they do not make what contractors believe are sufficient allowances for waste under present supplies of sheets.

American Artisan

**The Quiet Solution to your
Bearing Problems**

RANDALL

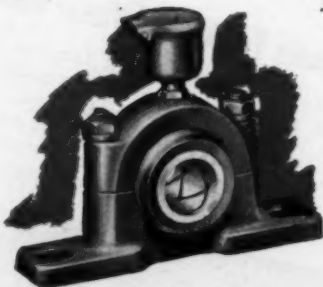
SELF-ALIGNING, SELF-LUBRICATING
PILLOW BLOCKS



One-Piece Steel Housing Pillow Block
Either Double or Single Oil Reservoir



NEW STREAMLINED ONE-PIECE STEEL
HOUSING PILLOW BLOCK
Either Double or Single Oil Reservoir



STANDARD PILLOW BLOCK
Single Oil Reservoir

Quiet Randall Self-Aligning, Self-Lubricating Pillow Blocks are Trojans for work. You see them on all types of *air conditioning*, heating and air-handling equipment . . . but you never hear them.

With only a minimum of attention, they will last the life of the equipment on which they are installed because they are built to the highest quality standards.

Quiet Randall Pillow Blocks are the last word in dependability and economy. Behind their superior performance lie three decades of specialization in the graphite bearing field.

Write Dept. 811 now for Catalog No. 42 . . . and let Randall engineers help you find the solution to your bearing problems.

Representatives Carrying Stocks:

C. W. Marwedel
San Francisco, Calif.

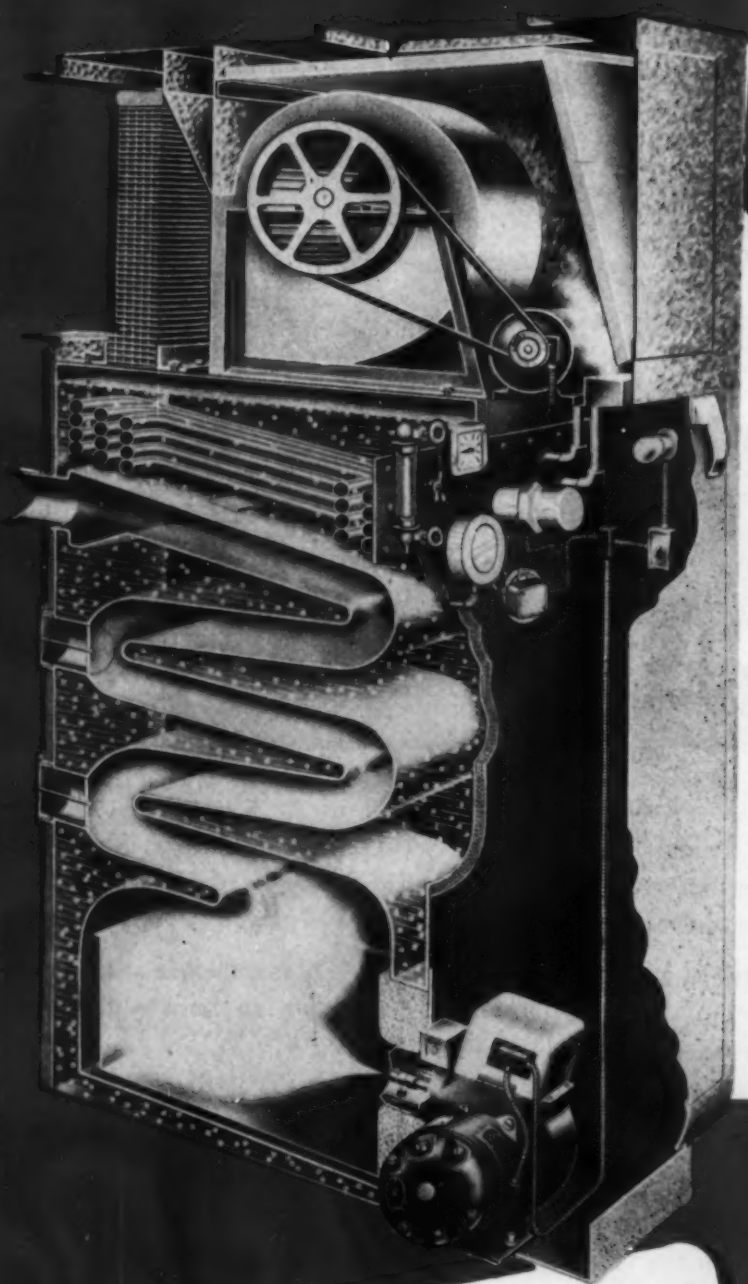
Tek Bearing Company
177 Lafayette Ave., New York 13
510 Cambridge St., Boston 34

Salt Lake Hardware Company
Salt Lake City, Utah

Edward D. Maltby Company
1718 Flower St.
Los Angeles 15, Calif.

Randall

GRAPHITE PRODUCTS CORPORATION
609 WEST LAKE ST., CHICAGO, ILLINOIS



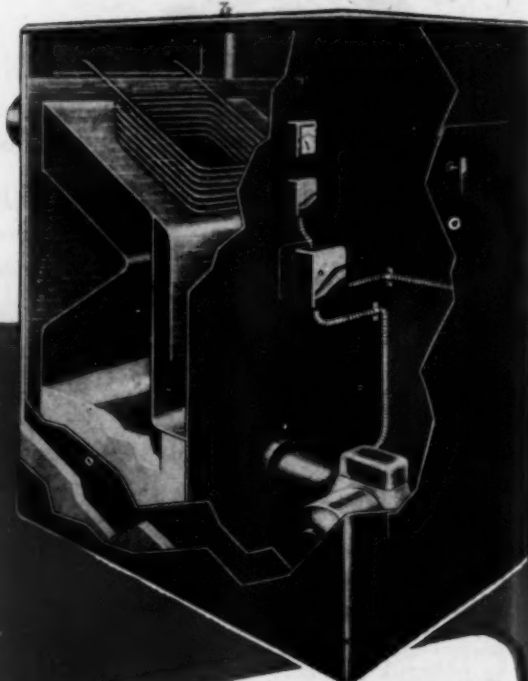
Packaged Heat Vaporair

Unique Packaged Heat split system unit combines warm air with steam—and also provides automatic year-round hot water! The hot water is furnished by unit itself—there's no need to install any additional equipment whatever. This amazing unit permits the use of steam at distant outlets where warm air ducts would be expensive or impractical, also in rooms—bathroom, kitchen, etc.—from which odors might be circulated by an ordinary warm-air system. Forced filtered air eliminates circulation of dust and pollen; humidity control is provided. The Vaporair brings split-system heat into the popular, big-volume market. It sells for no more than an ordinary, "straight" warm air unit!

THE COMPLETE "PACKAGED HEAT LINE...."

More and more of your customers are going to demand heat "by the package." More and more dealers are going to make every effort to see that they get it. If we could show you our stacks of orders, requests and correspondence, you'd have all the proof you'd want!

"Packaged Heat" is still necessarily scarce. But forward-looking oil and



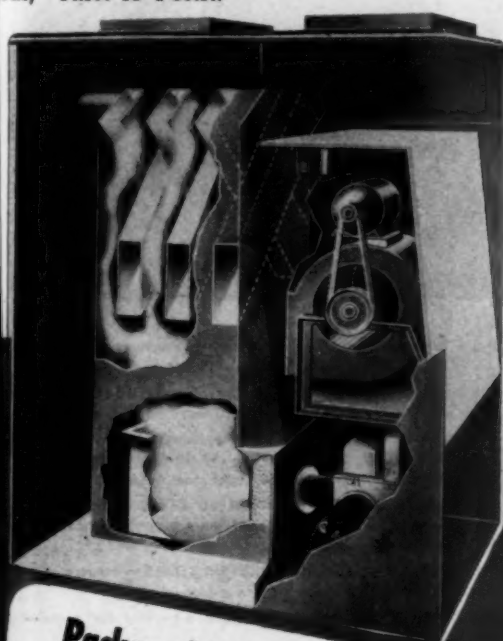
Penngunn Tankless Water Heater

Ample capacity for eight families. Ideal for the home with winter air-conditioning and for small stores, washrooms, barber shops, gas stations, etc. Delivered complete with standard Penn oil or gas burner. Completely automatic operation.

*Engineered at the Factory...
Installed in the Basement!*

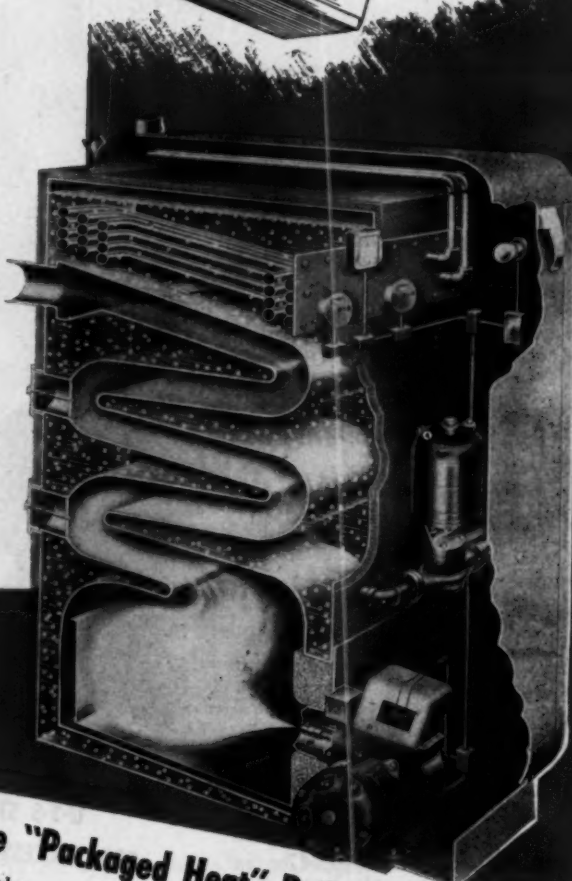
Gas-heat men are patiently merchandising—in advance—the idea of "Packaged Heat." They know that the "Packaged Heat" Line will be the line of least sales resistance. To help them, we are furnishing consumer advertising material.

"Packaged Heat" is an unique line that cannot be effectively imitated, because the basic construction which makes true "packaging" possible is patented. For your only complete "Packaged Heat," turn to Penn.



Packaged Heat Direct Fired Air Conditioning Unit

The equal of a de-luxe warm air furnace at an economy price. Every inch of heating surface is under direct fire—a method of construction that adds 30% more efficiency than secondary tubes or passages.



The "Packaged Heat" Boiler-Burner Unit

Packaged Heat Boiler-Burner Units are unmatched in heat transfer, fuel economy, low stack temperatures and quietness of operation. Every part from burner to panel light is factory assembled and balanced. Year round HOT water at low cost with either steam or hot water radiation. ALL-STEEL BOILER of 1/4" extra quality flange steel with stainless steel hearth assists in fastest possible heat transfer. This boiler is guaranteed for three years against all defects of materials or workmanship.

PENN. BOILER and BURNER MFG. CORP.
LANCASTER, PENNSYLVANIA

Neat jobs like this

*-EASY
with U.S.S.
Sheets*

HERE'S WHY: Uniform in softness, flatness and surface, U·S·S Galvanized Sheets are easy to fabricate. You get true bends, tight seams and neat joints — even in forming the most difficult angles and shapes. And their tightly adhering coating of zinc is highly resistant to cracking and flaking . . . assures a long-lasting finish that contributes to the pleasing appearance and salability of every job you turn out.

But workability is not the only reason for the tremendous popularity of these superior steel sheets. The most widely advertised and best-known sheets in the industry, they enjoy a public acceptance second to none. Customers know that the familiar U·S·S trade-mark stands for dependable quality.

Whatever your steel sheet requirements, you can get them from your U·S·S Steel jobber. And you can be certain that whatever you order will be completely satisfactory. Get in touch with him today. With the production and delivery situation improving rapidly, he may have just what you need any day now.



**U·S·S STEELS
FOR SUCCESSFUL SHEET
METAL WORKMANSHIP**

U·S·S GALVANIZED STEEL for sheet metal structures requiring the added protection of a zinc coating.

U·S·S COPPER STEEL to give twice the atmospheric corrosion resistance of regular steel at little additional cost.

U·S·S DUL-KOTE — A dull-surfaced galvanized sheet and **U·S·S PAINTBOND** — a Bonderized, galvanized sheet, both specially prepared for immediate painting and better paint adherence.

U·S·S HOT-ROLLED AND COLD-ROLLED STEEL to provide the basic advantages of steel, plus maximum economy, in accordance with the needs of each individual job.

U·S·S STAINLESS AND HEAT RESISTING STEELS to assure high resistance to corrosion and heat, and to reduce weight.

U·S·S VITRENAMEL — Sheets designed especially for porcelain enameling.

U·S·S LOW-ALLOY, HIGH-STRENGTH STEELS to resist corrosion and increase strength-weight ratio.

U·S·S STEEL SHEETS

CARNEGIE-ILLINOIS STEEL CORPORATION, Pittsburgh and Chicago

COLUMBIA STEEL COMPANY, San Francisco

TENNESSEE COAL, IRON & RAILROAD COMPANY, Birmingham

United States Steel Supply Company, Chicago, Warehouse Distributors

United States Steel Export Company, New York



UNITED STATES STEEL



"Look for this Sign"



... is that public esteem which results
from extensive dealing and service over the years. It has a financial
value on the books of your business. • And this Good-will results in Public Acceptance

... yes, Public Preference which is demonstrated by so many satisfied buyers of Williamson
Heating Equipment who tell their friends to "Look for this Sign." • And why so many
dealers, throughout the land, find it profitable to be "Authorized Williamson Dealers."

WILLIAMSON
WARM AIR HEATING

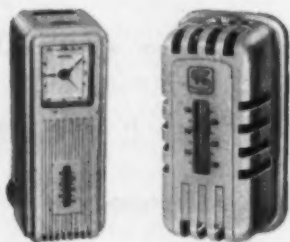
THE WILLIAMSON HEATER COMPANY, CINCINNATI 9, OHIO

Sampsel CONTROLS

for **GAS, OIL, STOKER** and
HAND-FIRED FURNACES
and **BOILERS**

Sampsel Dealers Have A Complete Line to Sell!

THERMOSTATS Seven *Standard Models*, with and without wall bases, for every voltage requirement. Two *Cooling-Type Thermostats*. Full temperature range of 50° to 90°. Three *Day-Night Clock Thermostats* for every type heating system



STOKER CONTROLS For every domestic, commercial, industrial installation. Built-in, heavy duty type relays and transformers. Carry exclusive Sampsel patents and Underwriters' Laboratory approval!

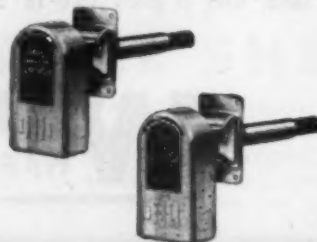


DAMPER CONTROL Built-in heavy duty transformer. Maintains temperature within 1° of thermostat setting. Used with Standard or Day-Night Thermostat and S-48 Limit or S-49 Fan Control.



LIMIT CONTROLS Type S-48, *3-IN-1* Warm Air Furnace Control. Adaptable to 2 or 3 wire line or low voltage operation. Patented switch. Adjustable differential of 10° to 90°. Usable with ALL warm air heating.

Type S-49, Fan or Blower Control for 2 wire line voltage operation.



PACKAGE UNITS Each, a COMPLETE set of controls for warm air furnaces, unit heaters, stokers, or window and attic fans, packaged with all installation accessories. Provide every control needed for specific heating systems. Build profitable, complete sales for you!

Other Sampsel Controls

- Relays
- Transformers
- Pump Switches
- Timing Devices
- Fence Controllers
- Unit Heater Controls

Send for Complete Sampsel Catalog!

**SAMPSEL
TIME CONTROL, INC.**
SPRING VALLEY, ILLINOIS



HOW TO LICK A PROBLEM IN A FEW STEPS

Let's say some change in your product design, production schedule or fabricating methods gives you a steel problem. It may involve metallurgy, delivery, finish, gauge or width—any of a score of "variables" in specifications.

At Weirton, the solution is only "a few steps" away. For the Weirton Steel Company is an integrated mill, with all phases of operation centralized and coordinated under one roof. Metallurgist, production man, salesman and shipping supervisor can get together on short notice to give your problem prompt attention.

Weirton customers recognize this benefit as the "plus factor" in Weirton steels—Weirite, Weirzin, Weircoloy, Weirlead, hot and cold rolled strip, sheets and ternes, cold rolled spring steel, N-A-X High-Tensile.

WEIRTON STEEL CO.

WEIRTON, W. VA. Sales Offices in Principal Cities

Division of NATIONAL STEEL CORPORATION Executive Offices, Pittsburgh, Pa.



READY NOW!



Your NEW Fall **DUST-STOP** T. M. Reg. U. S. Pat. Off. **PROMOTION KIT!**

If you have sold DUST-STOPS in the past, we need but mention that another Fall Promotion Program is ready for your use. If you haven't handled these profitable replacement air filters, we would suggest you look into the business—and the effective selling helps that are furnished to you *free*.

As in the promotion last spring, incidentally, the most successful in DUST-STOP history, a *complete* selling kit has been prepared. It contains envelope enclosures, counter literature, simple mailing pieces and display material. Also, blower-cabinet stickers and the handy "Filter Size" catalog. Write today for your **FREE KIT**. Order standard package D-46-22.

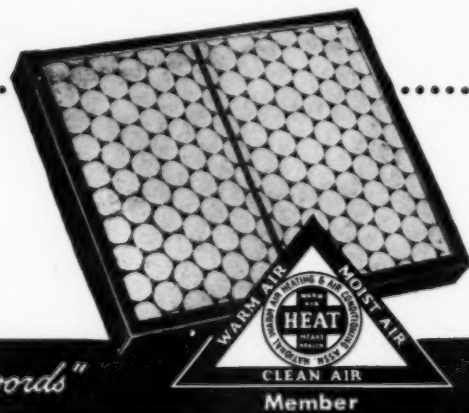
Get Your Share of this **PROFITABLE BUSINESS**

With nearly two million homes heated with modern forced-warm-air furnaces, and each needing two or more replacement filters at least once a year, DUST-STOPS are becoming "big business" . . . and *profitable business* for a lot of dealers. Ask your distributor about it, or write Owens-Corning Fiberglas Corporation, Dept. 930, Toledo 1, Ohio.

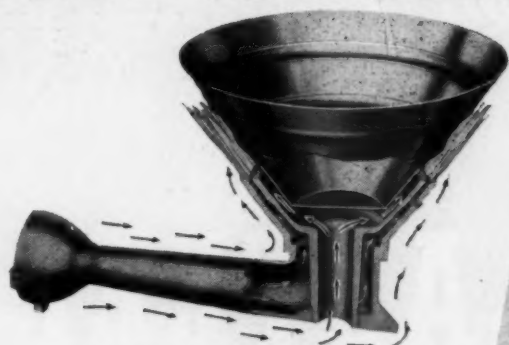
In Canada: Fiberglas Canada Ltd., Toronto, Ontario

**OWENS-CORNING
FIBERGLAS CORPORATION**

"Your partner whose Actions speak louder than words"



Appearance and performance your customer expects . . .



New, Highly Efficient Burner

Specifically designed for conversion purposes. Burns gas completely and evenly around entire circumference. Heat instantly directed toward prime heating surface. Secondary air combines with gas on both sides of the flame.



Electric Ignition — No Servicing Problem

Mueller's exclusive non-cycling electric igniter eliminates use of matches, tapers, or burning paper to light the pilot. Eliminates necessity of keeping burner operating in mild weather.

in the new Mueller Climatrol Gas Conversion Burner

This new burner enables you to offer the most advanced engineering design, modern styling, and dependable performance. Its high efficiency, convenient electric ignition, complete thermostat control, exceptionally quiet operation, and many other features make it a worthy member of the Climatrol line — a product you can recommend with confidence and pride. Mueller's 89-year reputation stands behind it.

Write for bulletin.

L. J. Mueller Furnace Co.
3010 W. Oklahoma Ave. Milwaukee 7, Wis.

MUELLER
Climatrol

REG. U. S. PAT. OFF.

D-64



Three Sizes

Maximum B.t.u. input 125,000; 175,000; 225,000. Listed by the American Gas Association for operation with natural, mixed, or manufactured gas.

*Here's the Roof that Really
Keeps the Weather Out!*

PLASTEEL



Protection against the weather is important. But that's not all. Weather-tested Plasteel is fortified against *all* corrosive influences—the extremes of heat, cold, moisture; of gases, acid fumes, mineral dusts, salt air and other atmospheric conditions. Plasteel is scientifically processed for *permanent qualities*. It takes **STEEL** sheets for basic strength; hermetically seals them in weather-tight plastic for resistance to corrosion; and then for further insulation and durability, adds a protective finish of pure mineral mica that needs no paint, no repairs. A combination that really gives *extra protection!* It not only keeps the weather out but eliminates deterioration and higher maintenance costs. That's why experienced engineers, architects and maintenance operators prefer *Plasteel Roofing and Siding*.

Let us send samples and details. Write Today.

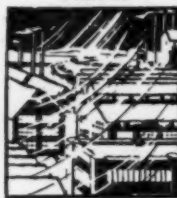
PLASTEEL Defies:



HEAT



MOISTURE



COLD



ACID FUMES

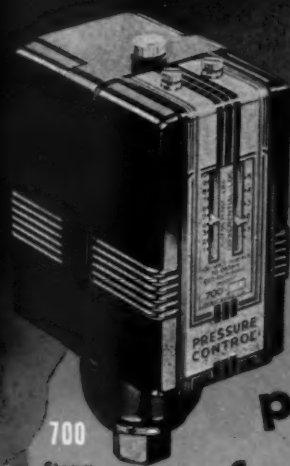


PROTECTED STEEL PRODUCTS

General Office and Plant

• Washington, Pennsylvania

SAFETY CONTROL



700
Steam



500
Hot Water



405 Warm Air

**positive protection
for warm air, hot water
and steam heating**

outstanding features



- warm air**
- Twin Contact Switch
 - Easy independent adjustment of "off" and "on" pointers.
 - Temperature settings made without removing cover.



- hot water**
- Twin Contact Switch
 - Strap-on or Immersion types of equal sensitivity
 - Simple, dependable, Fail-Safe design



- steam**
- Twin Contact Switch
 - Expanded scales and external finger tip adjustments
 - Spring Hinge Construction for greater accuracy and dependability

You can install Twin Contact Limit Controls with complete confidence — confidence in their dependability, accuracy, their superior performance under every condition.

For these Safety Controls employ the exclusive Twin Contact switching mechanism, assuring clean, positive contact and split second snap action. They provide dependable, automatic protection against dangerous, excessive temperatures in the heating plant. Complete, adjustable settings, quick response to slightest temperature or pressure changes, simplified mountings and convenient adjustments reduce service calls to a minimum — increase customer satisfaction and good will.

Leading manufacturers of automatic heating equipment know the value of co-ordinating Perfex Twin Contact Controls with their products — know from field experience that Perfex best reflects their own high standards of quality.

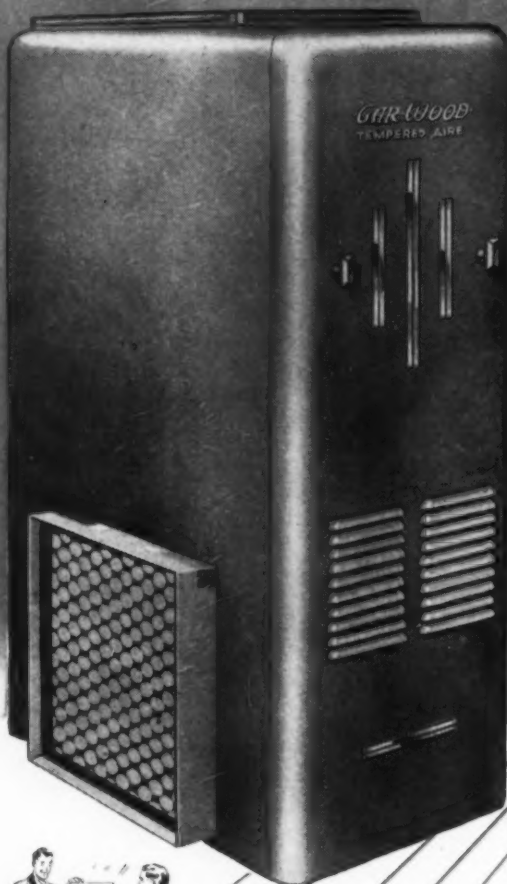
PERFEX CORPORATION, MILWAUKEE 7, WIS., • Perfex Controls Ltd., Toronto 1, Ont.



PERFEX

TWIN CONTACT CONTROLS

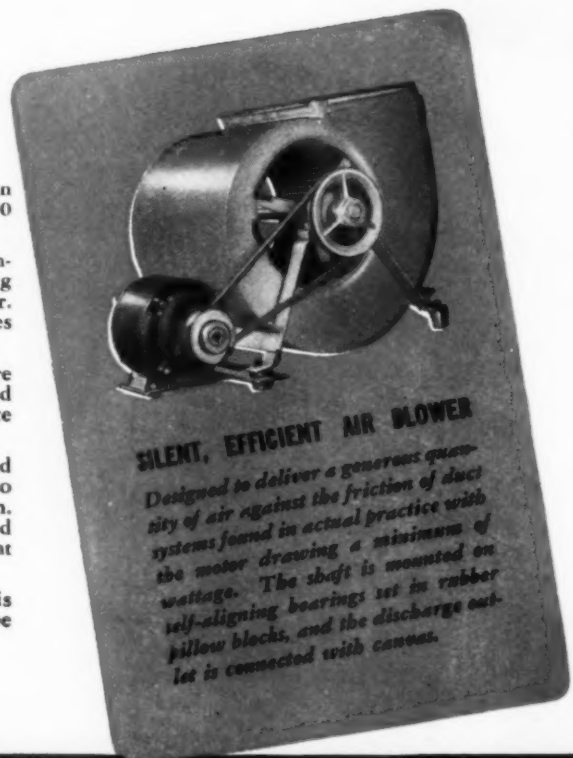
MANUFACTURERS OF AUTOMATIC CONTROLS BEARING THE TRADE MARK NAMES OF LEADING PRODUCERS OF AUTOMATIC HEATING SYSTEMS AND APPLIANCES



These
OUTSTANDING FEATURES
make *GAR-WOOD*
TEMPERED-AIRE
*Easier to
Sell!*



- 1 THE NEW completely automatic Tempered-Aire is an integrally built furnace burner unit that is backed by 20 years of research.
- 2 THE ECONOMIZER, located below the firebox, contains many narrow tubes to provide greater heating surface and more intimate contact of hot gases and air. Cold air from the blower is forced between these tubes at high velocity before reaching the hotter firebox.
- 3 THE BURNER and firebowl combustion chamber are integrally built. The unit has completely demonstrated the soundness and value of its design features to produce a clean fire with a minimum of excess air.
- 4 THE POWER UNIT maintains a definite controlled pressure that assures the proper mixture of oil and air to produce a uniform flame regardless of draft variation. All parts are die-formed and welded into a single rigid unit. The power unit is rubber mounted for silent operation.
- 5 NEAT, COMPACT, beautifully styled Tempered-Aire is designed to meet the heating requirements of every type and size home.



Write Today
for This
Free Booklet

GAR WOOD INDUSTRIES, INC.
HEATING DIVISION • DETROIT 11, MICHIGAN

Canadian Distributors: Engineering Industries, Ltd.
114 Laird Drive North, Leaside, Toronto 12, Ontario

HOISTS AND BODIES • WINCHES AND CRANES • TANKS • ROAD MACHINERY • MOTOR BOATS

THE LOCKFORMER 16



**... A HEAVY DUTY,
HEAVY CAPACITY LOCK
ROLLING MACHINE ...**

- PITTSBURGH LOCKS
- DOUBLE SEAM LOCKS
- STANDING SEAM . . .
- DRIVE CLEATS
- RIGHT ANGLES

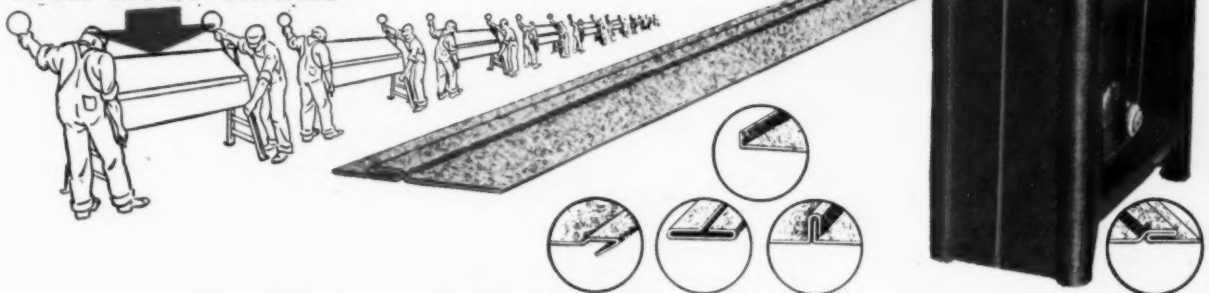
The Lockformer Line includes the Models 16, 18, 20, 22 and 24. Lockformer also makes the Easy Edger and Power Flangers 16 and 18, plus Power Flanger Attachments.

THE "16", with complete auxiliary roll sets, will fabricate both Pittsburgh and Double Seam Locks in all gauges from 16 to 26 inclusive, Drive Cleats from 20 to 26 gauge, Standing Seams from 16 to 20 gauge and Right Angles from 16 to 24 gauge.

Intended for large volume shops han-

dling all gauges of metal, the "16" is designed for constant, heavy-duty operation. Specifications include an all-steel forming head, hardened and ground shafts, case hardened steel forming rolls, machine cut gears and roller bearings throughout. Write for literature.

**ONE MAN WITH A LOCKFORMER CAN MAKE MORE
PITTSBURGH LOCKS THAN SIXTEEN MEN
WITH EIGHT BRAKES**



THE LOCKFORMER CO.

4615 ARTHINGTON STREET • CHICAGO 44, ILLINOIS

J. S. Cassedy, Inc. of Boston

Installed Herman Nelson Centrifugal Fans



Dependents' Building, Chelsea Naval Hospital, Chelsea, Mass.
Curtin and Riley, Architect, Boston
Ernest C. Whitaker, Consulting Engineer, Boston
J. S. Cassedy, Inc., Heating Contractor, Boston



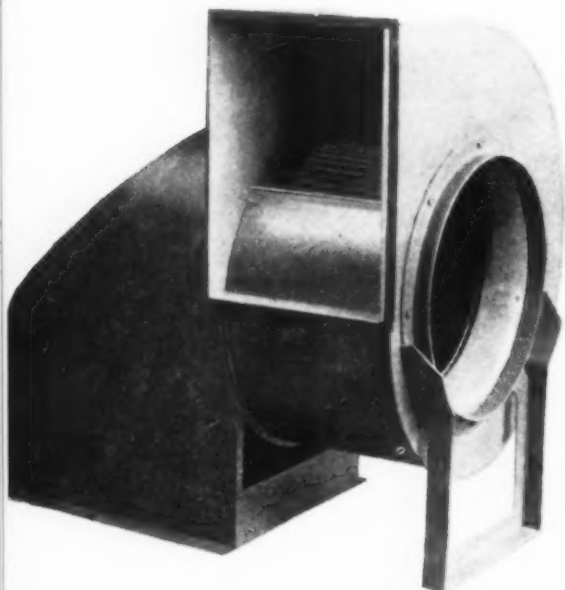
A. Klonower of J. S. Cassedy, Inc.

Among the many fine buildings in which Herman Nelson Centrifugal Fans have been installed to provide proper ventilation is the Dependents' Building at the Chelsea Naval Hospital.

It's not at all surprising that Heating Contractors show a marked preference for Herman Nelson Equipment. Each Herman Nelson Product is the result of

painstaking research and development—backed by the experience gained during 40 years confined exclusively to the manufacture of heating and ventilating equipment. Even more important . . . Herman Nelson Products have proved their superiority to Contractors by providing greater economy and operating efficiency in installations all over America. That's the reason thousands agree you can't buy better equipment than that bearing the Herman Nelson nameplate.

Contact the nearest Herman Nelson Distributor or Product Application Engineer. He is trained and qualified to assist you in the proper application of Herman Nelson Products . . . to help you get more business through the correct installation of quality products that really do the job.



Herman Nelson Centrifugal Fans



THE HERMAN NELSON CORPORATION
for 40 years manufacturers of quality heating and ventilating products
MOLINE, ILLINOIS

Her
Boston—W
Chicago—
Cincinnati
Detroit—M
Milwaukee
Minneapolis
Moline—A
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Duluth, M
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Carman-T
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Erie, Pa
Cedar Ra
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Baltimo
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Harry Co
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Crane Co
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Dallman
Sacram
John B. I
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R. B. Dur
Bangor,
Electric S
Atlanta
Electric S
Galvest
Evansvil
Evansvil
Ewing S
Burlingt
Fox Elect
Elgin, I
Frederick
Frederick

Fans in this Naval Hospital

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 Cape Elizabeth, Me.—The Partridge Co.
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Louisville, Ky.—John Zimmermann
 Los Angeles, Calif.—F. J. Hearty & Co.
 Memphis, Tenn.—Southern Sales Co.
 Miami, Fla.—R. P. Kelley
 Minneapolis, Minn.—P. R. Reese
 Missoula, Mont.—W. M. Walterskirchen Co.
 Nashville, Tenn.—Southern Sales Co.
 New Orleans, La.—L. Villere Cressy Co.
 Oklahoma City, Okla.—O. T. Carroll
 Omaha, Neb.—Verne Simmonds
 Portland, Ore.—T. C. Langdon & Co.
 Richmond, Va.—W. Wallace Neale
 Saginaw, Mich.—W. A. Witheridge Co.
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 Seattle, Wash.—E. H. Langdon Co.
 Spokane, Wash.—R. L. Nelson

Herman Nelson Distributors

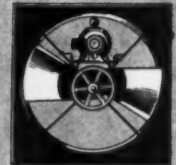
Abbott Steam Specialty Co.
 New Bedford, Mass.
 Bailey-Farrell Co.
 Pittsburgh, Pa.
 Baker Specialty & Supply Co., Inc.
 Logansport, Ind.
 E. Best Plbg. & Htg. Supply Co.
 Quincy, Ill.
 W. L. Blake & Co.
 Portland, Me.
 Bond Supply Co.
 Kalamazoo and Battle Creek, Mich.
 J. C. Bowles Co.
 Seattle, Wash.
 J. R. Bradley Co.
 Reno, Nevada
 Bramhall Supply Co.
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 York, Pa.
 Carman-Thompson Co.
 Lewiston, Me.
 W. A. Case & Son Mfg. Co.
 Erie, Pa., and Jamestown, N. Y.
 Cedar Rapids Pump & Supply Co.
 Cedar Rapids, Iowa
 Central Metal & Supply Co.
 Baltimore, Md.
 Consolidated Supply Co., Inc.
 Portland, Ore.
 Cooper Supply Company
 Tulsa, Okla.
 Harry Cooper Supply Co.
 Springfield, Mo.
 Corcoran Supply Co.
 Hyannis, Mass.
 Cordes Supply Co.
 Milwaukee, Wis.
 Crane Co.
 San Bernardino, Calif.
 Dallman Supply Co.
 Sacramento and San Francisco, Calif.
 John B. Davis Co., Inc.
 Rochester, N. Y.
 Desco Corporation
 Wilmington, Del. and Chester, Pa.
 R. B. Dunning & Co.
 Bangor, Me.
 Electric Supply Co.
 Atlanta, Ga.
 Electric Supply Co.
 Galveston, Texas
 Evansville Supply Co.
 Evansville, Ind.
 Ewing Supply Co.
 Burlington, Iowa
 Fox Electric Supply Co.
 Elgin, Ill.
 Frederick Trading Co.
 Frederick, Md.

Globe Machinery and Supply Co.
 Des Moines and Cedar Rapids, Ia.
 Griffith Electric Supply Co.
 Trenton, N. J.
 Hajoca Corporation
 Jacksonville and Tampa, Fla.
 Columbus and Savannah, Ga.
 Asheville and Charlotte, N. C.
 Richmond, Norfolk, Roanoke, Danville, and Staunton, Va.
 Hall & Knight Hardware Co.
 Lewiston, Me.
 Hansen Supply Co.
 New London, Conn.
 The Hardware & Supply Co.
 Massillon, O.
 Heating Trades Supplies, Inc.
 Toledo, O.
 Hoe Supply Co.
 Christopher, Ill. & Paducah, Ky.
 Holyoke Supply Co., Inc.
 Holyoke, Mass.
 The Hughes Supply Co.
 Mansfield, O.
 Hyman Supply Co.
 Wilmington and Fayetteville, N. C.
 Industrial Supply Co.
 Terre Haute, Ind.
 Industries Distributors, Inc.
 Shreveport, La.
 Industries Sales Corp.
 New Orleans, La.
 Industries Supply Co.
 San Diego, Calif.
 Inland Supply Co.
 Champaign, Danville, Elgin and Joliet, Ill.
 Inland-Peoria Supply Co.
 Peoria, Ill.
 International Engr. & Supply Co.
 Providence, R. I.
 J. D. Johnson Co., Inc.
 Poughkeepsie, N. Y.
 E. Keeler Company
 Williamsport, Pa.
 Kester Machinery Co.
 Winston-Salem, High Point and Burlington, N. C.
 The W. H. Kiefaber Co.
 Dayton and Hamilton, O.
 Knapp Supply Co.
 Muncie, Ind.
 LaCrosse Plumbing Supply Co.
 LaCrosse, Wis.
 Lehigh Valley Supply Co.
 Allentown, Lansdale, East Stroudsburg and Easton, Pa.
 LeValley, McLeod, Kinkaid Co., Inc.
 Elmira, Olean, Schenectady, N. Y.
 The Link Company
 Jackson, Mich.
 Luzerne & Lackawanna Supply Co.
 Wilkes-Barre, Pa.
 Manufacturers Selling Co.
 Trenton, N. J.

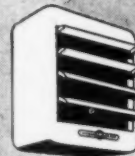
Marsden & Wasserman, Inc.
 Hartford, Conn.
 Michigan Supply Co.
 Lansing, Mich.
 Chas. Millar & Son Co.
 Utica and Binghamton, N. Y.
 Springfield, Mass., & St. Johnsbury, Vt.
 Missouri Water & Steam Supply Co.
 St. Joseph, Mo.
 Morrison Supply Co.
 Fort Worth, Amarillo, Lubbock, Wichita Falls and Sweetwater, Tex.
 Moff Bros. Company
 Rockford, Ill.
 Murphy Supply Co.
 Green Bay, Wis.
 The Ohio State Supply Co.
 Youngstown, O.
 Palmer Plumbing Supply Co.
 Laconia and Rochester, N. H.
 Palmer Supply Co.
 Portland, Me.
 Reading Foundry & Supply Co.
 Reading, Pottsville, and Lebanon, Pa.
 Robbins-Gamwell Corporation
 Pittsfield, Mass.
 The Roedel Company
 Zanesville, O.
 The Salina Supply Co.
 Salina, Kan.
 San Antonio Machine & Supply Co.
 Corpus Christi and Waco, Tex.
 Shore Distributors
 Salisbury, Md.
 Southern Equipment Co.
 San Antonio, Tex.
 Strong, Carlisle & Hammond Co.
 Cleveland, O.
 Tay-Holbrook, Inc.
 Sacramento, San Francisco, Fresno, San Jose and Stockton, Calif.
 The Tholen Bros. Supply Co.
 Leavenworth, Kan.
 The Topeka Steam Boiler Wks. Co., Inc.
 Topeka, Kan.
 Trimble & Lutz Supply Co.
 Wheeling, W. Va.
 Geo. E. Trudel Co.
 Manchester, N. H.
 U. S. Supply Co.
 Kansas City, Mo., Wichita, Kan., Oklahoma City, Okla., and Omaha, Neb.
 The Universal Supply Co.
 Parkersburg, W. Va.
 J. A. Walsh & Co., Inc.
 Houston, Tex.
 Washburn-Garfield Co.
 Worcester, Mass.
 Western Maryland Supply Co.
 Hagerstown, Md.
 Wieman Company
 Sioux City, Ia.
 Wisconsin River Supply Co.
 Wausau, Wis.
 Yelton-Weaver Supply Co.
 Springfield, Ill.



Herman Nelson
Direct Drive
Propeller Fans



Herman Nelson
Belt Drive
Propeller Fans



Herman Nelson Horizontal
Shaft Propeller-Fan Type Unit Heaters



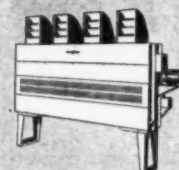
Herman Nelson
Type H
Centrifugal Fans



Herman Nelson Vertical
Shaft Propeller-Fan Type Unit Heaters



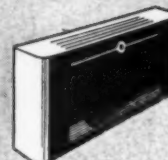
Herman Nelson
Type HB
Centrifugal Fans



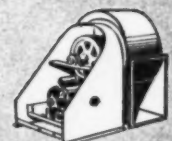
Herman Nelson
Blower-Fan Type
Unit Heaters



Herman Nelson
De Luxe Unit Heaters



Herman Nelson
Unit Ventilators



Herman Nelson
Belt Drive
Unit Blowers



Herman Nelson
Direct Drive
Unit Blowers



Make every minute count... MORE with P-K Fastening Devices

Whether a job takes a few hours — or a few months — why not make every minute count MORE? More work turned out, more money in your pocket, more satisfied customers. You can do it by taking full advantage of the P-K "short cut" fastening method.

If you're using P-K Type "A" Sheet Metal Screws, like leading contractors everywhere, you know how they lop off time from your work schedules. Other types of P-K Screws may save you even more. It's plain common sense to find out. Check the complete line against the jobs ahead of you. See how many places P-K fastenings can eliminate tapping, bolting, riveting, soldering.



On a job using heavy sheets, consider type "Z", or the heavy duty Hex Head. If you make stainless equipment for hotels, restaurants, etc., you can get Type "Z" screws made of stainless steel.

On a masonry job requiring fastenings consider P-K Masonry Nails, more and more popular because they're easier, quicker to use.

On a siding job consider P-K Screwnails. They drive easy as nails — hold like screws.

It pays — to know the complete line. Write for Booklets Nos. 480 and 475A. Booklet 480 lists proper hole sizes for efficient driving and maximum security, other information. SAMPLES on request. Parker-Kalon Corp., 200 Varick Street, New York 14.

Sold only through Accredited Distributors



TYPE
"A"



TYPE
"Z"



HEX
HEAD

P-K



TYPE
"U"



TYPE
"U"



MASONRY
NAIL



SCREW
NAIL

PARKER-KALON

SELF-TAPPING SCREWS

A FASTENING FOR EVERY METAL AND PLASTIC ASSEMBLY

MEETS the DEMAND for

Fully Automatic

COAL HEAT...



"O.P." COAL BURNER

Automatic from coal bin to ash container!

The maximum of comfort, economy and convenience with *fully automatic* coal heat—that's what home owners are demanding.

"Original Pocahontas" Coal Burner gives them just that—the *comfort* of even coal heat, regulated by automatic controls—the *economy* of burning low-cost screenings—and the *convenience* of not having to shovel coal or dig clinkers.

Sell the bituminous coal burner that for over 11 years has been providing fully automatic coal heat in thousands of homes. Write today for information on the complete line of "O.P." equipment. There are still good dealership territories available.

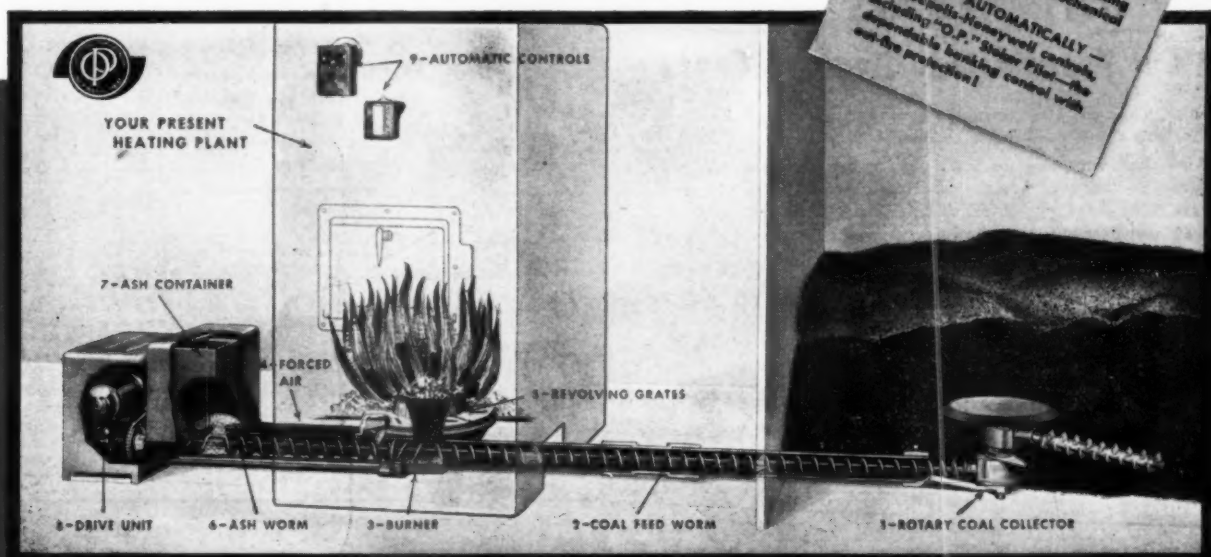
POCAHONTAS FUEL COMPANY INCORPORATED

338 East 131st Street

Stoker Division

Cleveland 8, Ohio

FEEDS COAL—screenings or regular stoker coals—any distance and around corners!
REMOVES ASHES into dust-proof container—holds ashes from 1/2 ton coal!
GIVES DOUBLE OVERLOAD PROTECTION—with circuit-breaking overload device and mechanical shear pin!
OPERATES AUTOMATICALLY—Minnesota-Honeywell controls, including "O.P." Stoker Pilot—the dependable burning control with out-fire protection!



"O.P." COAL BURNER

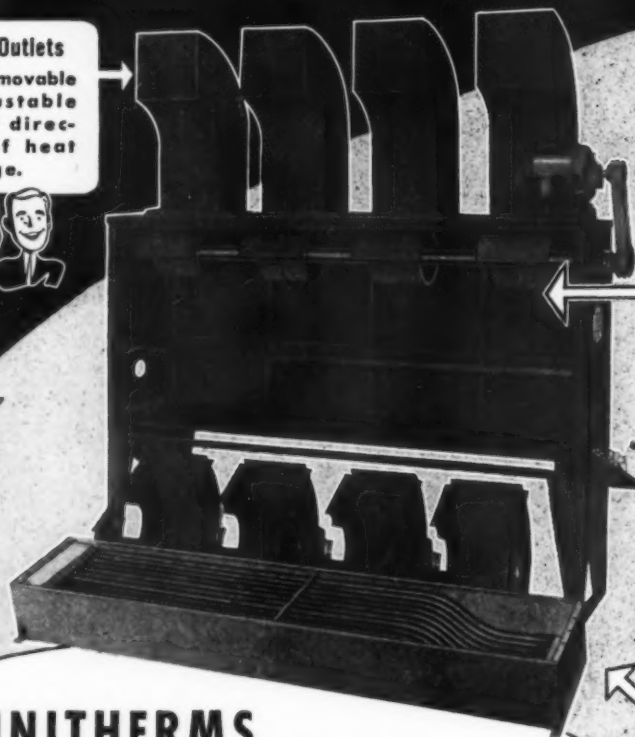
THE FIRST SUCCESSFUL BITUMINOUS BIN-FEED
ASH REMOVAL COAL BURNER... SUCCESSOR TO THE STOKER

TAKE A LOOK at what CLARAGE offers in UNIT HEATERS!

Square Outlets
Easily removable
and adjustable
for four direc-
tions of heat
discharge.



Front section of
casing, fan
 housings and
coil removed.



V-Belt Drive

Insures quieter opera-
tion and greater flexi-
bility of fan speed. (Di-
rect connected units can
be furnished.)



Centrifugal Fans

One for each
heater outlet. Pres-
sure type fans deli-
vering heat over
wide areas.



Syncrotherm Control

Regulates temperatures
by controlling with by-
pass dampers amounts of
air passing through and
around heating coil. Can
be automatically or manu-
ally operated.



Readily Accessible

Front or back section
of casing quickly re-
movable. All work-
ing parts completely
accessible.



Use UNITHERMS To Cut Your Factory Heating Costs

With Clarage Unit Heaters you get plenty of heat — where you want it — when you want it!

And thanks to our exclusive feature — **Syncrotherm Control** — Clarage Unitherms maintain uniform temperatures with relatively **LOW TEMPERATURE AIR** — fuel savings substantial.

Built for floor or ceiling installation in a liberal range of sizes, operating on steam or hot water.

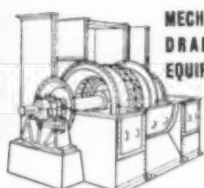
... And for Smaller Jobs

Clarage Unit Heaters (shown at right) are for small space heating, or to "help out" present equipment. Quiet in operation — ideal for offices and stores as well as factory service. Wide range of sizes, using steam or hot water.

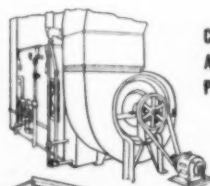


Sorry, but the large volume of orders already accepted prevents deliveries for 1946 heating season. We would, however, appreciate an opportunity to figure your future requirements.

SOME OF OUR OTHER PRODUCTS

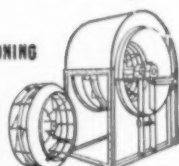


MECHANICAL
DRAFT
EQUIPMENT

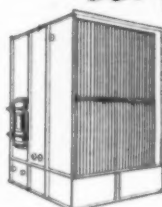


CENTRAL STATION
AIR CONDITIONING
PLANTS

AIR CONDITIONING
AND
VENTILATING
FANS



AIR
WASHERS



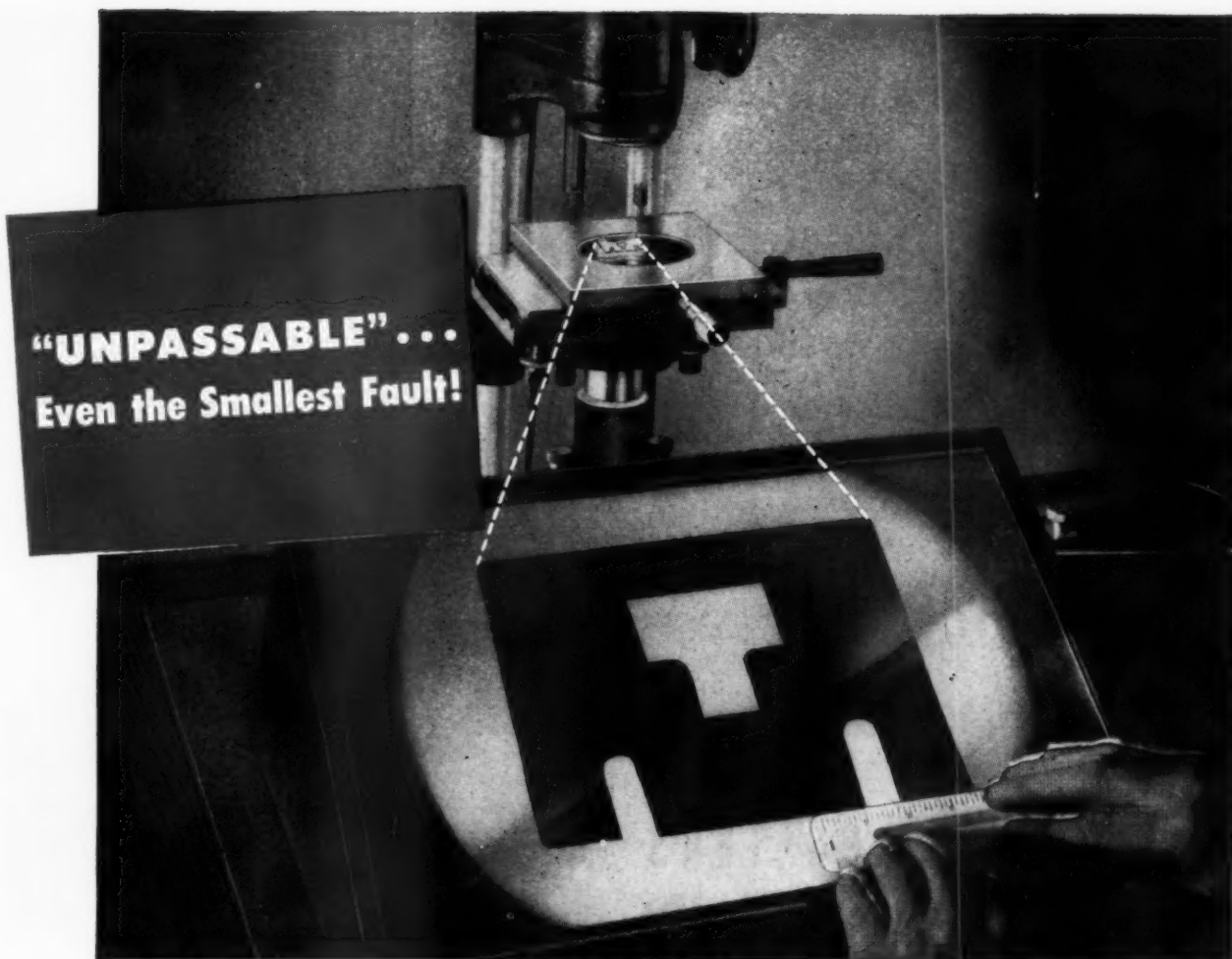
CLARAGE

FAN COMPANY

Kalamazoo, Michigan

APPLICATION ENGINEERING OFFICES
IN ALL PRINCIPAL CITIES





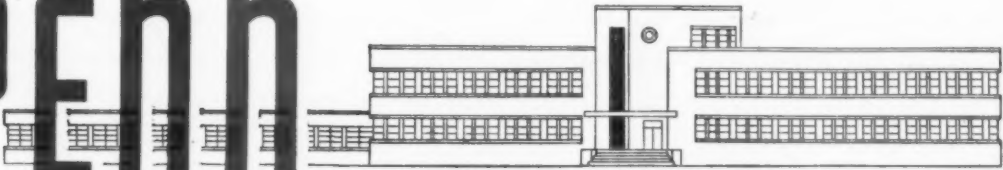
A PENN Quality Control Engineer looks at things with *super-critical* eyes. Even the slightest flaw . . . the smallest imperfection . . . is cause for rejection. Every PENN Control must measure up to rigid specifications. For, all PENN engineers and inspectors know that your business depends on satisfied customers.

Consequently, these experts are relentless in their desire to assure *the best automatic heating controls* you can possibly get. To aid them in this objective, they use precision equipment constantly. For instance, here, a Quality Control Engineer checks the accuracy of small parts used in PENN Controls with

an Optical Projector. This device greatly magnifies the part, thus making it easy to detect possible errors or faulty construction.

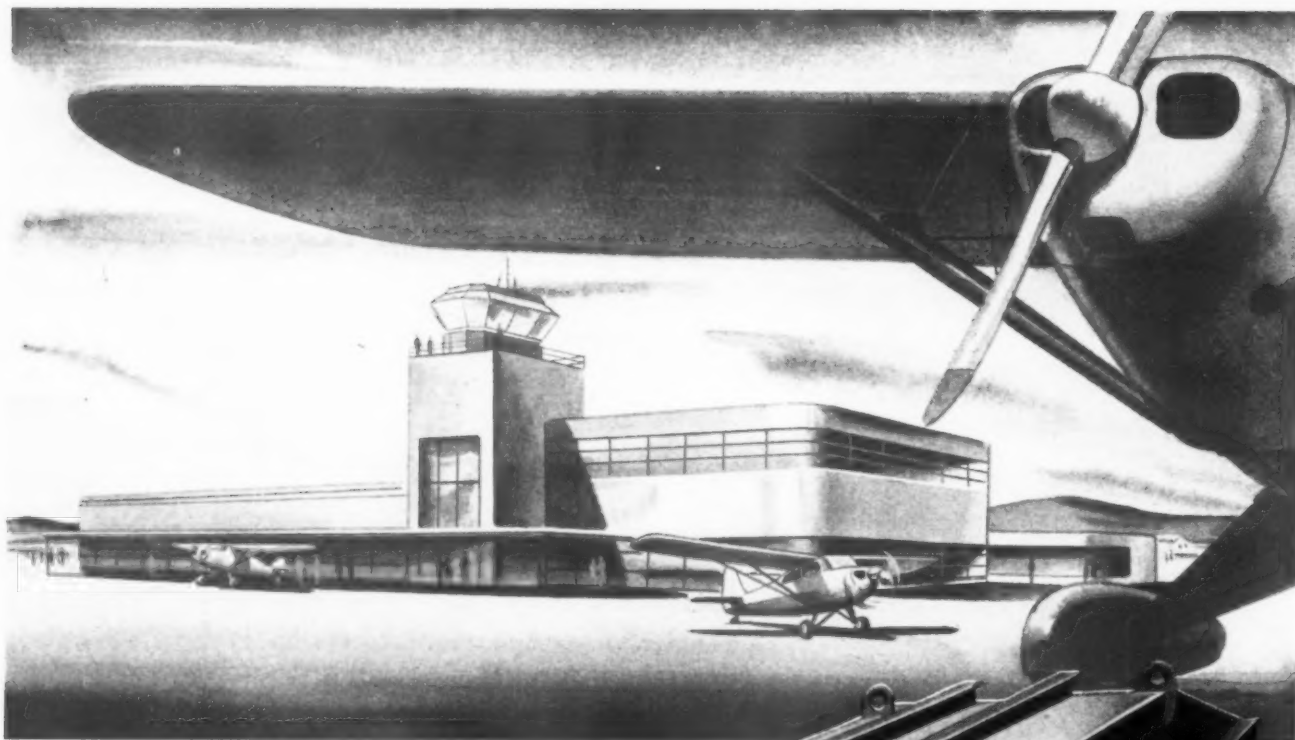
With such painstaking inspection and testing, it is only natural for PENN Heating Controls to assure highly satisfactory performance under all normal operating conditions. You'll find *no better controls are built* . . . yet their extra value involves no extra cost. Ask your jobber about PENN Controls for oil burners or coal stokers. There is one for every type of heating system. *Penn Electric Switch Co., Goshen, Ind.* Export Division: 13 E. 40th Street, New York 16, U. S. A. In Canada: Penn Controls, Ltd., Toronto, Ont.

PENN



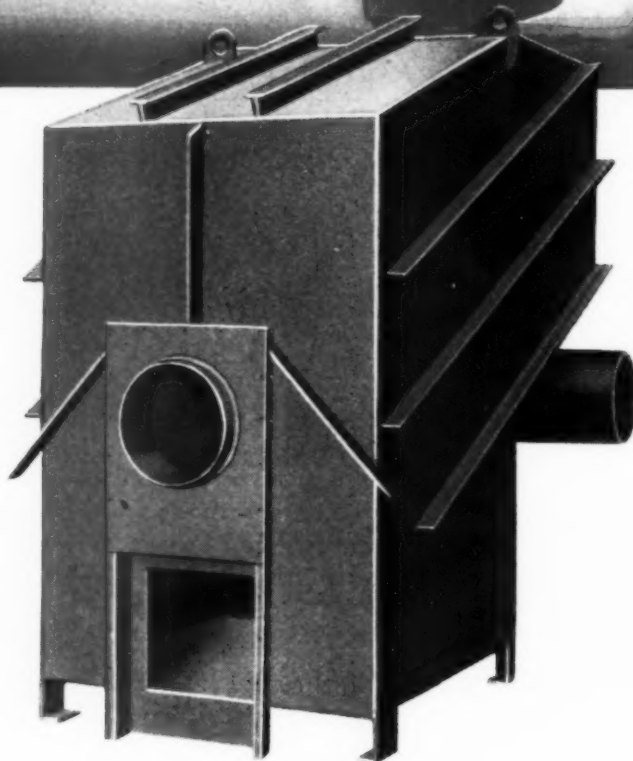
AUTOMATIC CONTROLS

FOR HEATING, REFRIGERATION, AIR CONDITIONING, ENGINES, PUMPS AND AIR COMPRESSORS

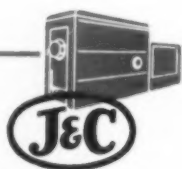


J&C POWER HEATERS FOR BIG HEATING JOBS

Building materials shortages can't last forever. When the wave of new construction sweeps the country, there will be plenty of profitable business for dealers who handle the complete line of J & C Power Heaters. These modern heating plants are engineered to produce up to 2,800,000 BTU. That means J & C dealers can reach the profitable heating market beyond the domestic field. For example, scores of hangars and terminal buildings will be erected at private and public flying fields throughout the nation. New schools and churches will be built. Stores. Factories. Warehouses. Apartment buildings. Office buildings. Scientifically designed J & C Furnaces heat them all—efficiently, economically, and cleanly. 90% direct radiation surface captures more heat from fuel. One-piece electrically welded construction prevents heat



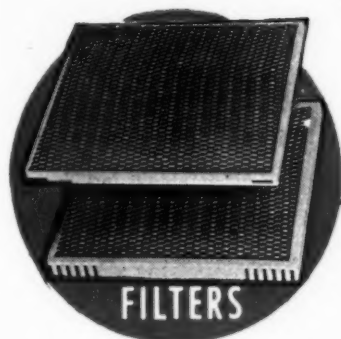
loss, keeps soot and fumes from entering air stream. Tough castings resist the strain of intermittent firing. For big profits, sell both large and small heating installations—J & C Power Heaters cover the field.



JACKSON & CHURCH CO., SAGINAW, MICHIGAN
WORK WELL DONE SINCE '81

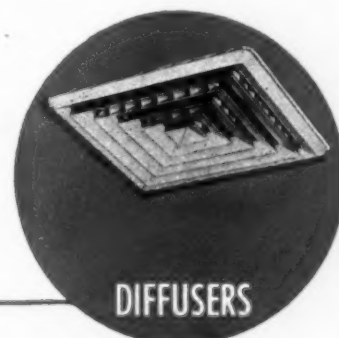
AGITAIR SERVES BEST—

AT THREE KEY POINTS IN AIR CONDITIONING AND VENTILATING SYSTEMS



FILTERS

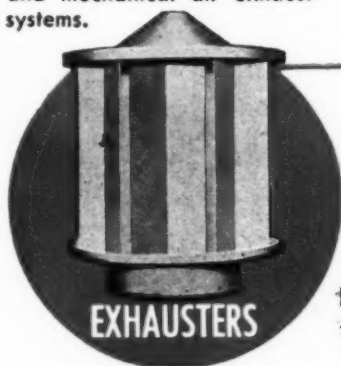
Permanent, all-metal Agitair Air Filters assure cleaner incoming air, hold more dirt. In all types and sizes for air conditioning, ventilating, and industrial applications.



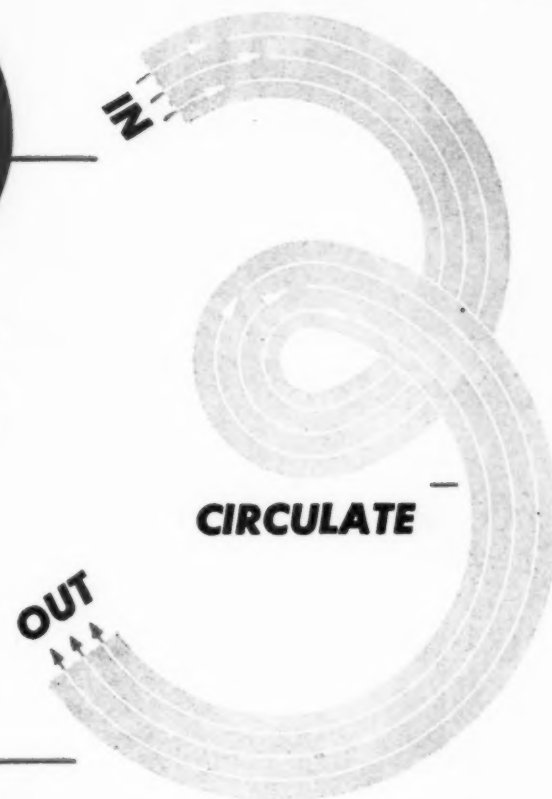
DIFFUSERS

Agitair Air Diffusers circulate the air draftlessly, quietly, and with no "cold spots." Available in attractive, highly efficient styles, both rectangular and circular, to fit any installation.

Agitair Exhausters, wind actuated, are ideal for both gravity and mechanical air exhaust systems.



EXHAUSTERS



CIRCULATE

In every heating, ventilating and air conditioning installation, there's a spot for an Agitair product—and in that spot Agitair will serve best.

All Agitair Products have been designed by experienced engineers who have spent years looking for better ways to clean air, to circulate air, to exhaust air, and yes, even to heat and cool air. Agitair Products have been installed the world over.

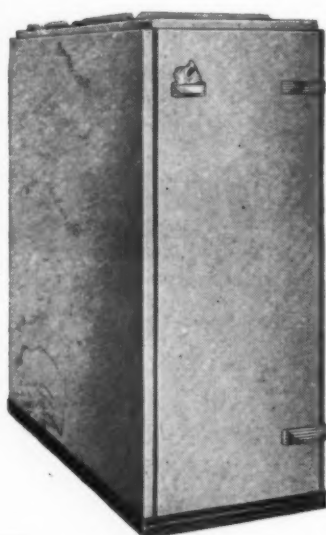
The phenomenal growth of Air Devices, Inc. is the best evidence of their ability to design and build equipment that meets all the rapidly changing requirements in the fields in which they serve.

There's an Air Devices, Inc. representative in your vicinity. Ask him for help with your heating and conditioned-air problems, and ask him to show you where "Agitair Serves Best."

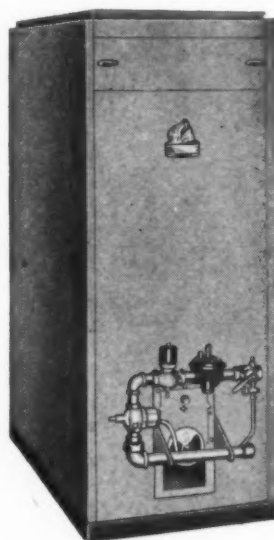
AIR DEVICES, INC. • 17 EAST 42nd STREET • NEW YORK 17, N. Y.

Luxaire's NEW GAS-FIRED EQUIPMENT

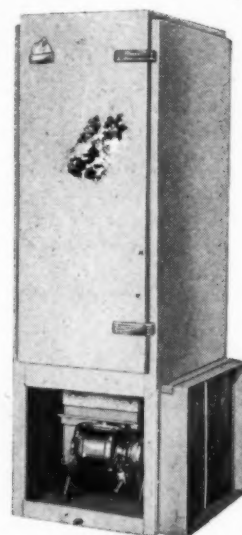
*Everything the
market demands!*



Series A
Gas-Fired, Steel
Air Conditioning Unit



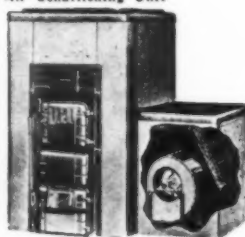
Series G
Gas-Fired, Steel
Gravity Furnace



Series H
Gas-Fired, Utility
Steel Air Conditioning Unit



Series 8000
Oil-Fired, Steel
Air Conditioning Unit



Series AC-700
Coal-Fired, Steel
Air Conditioning Unit

- ... SMART STYLING
- ... DISTINCTIVE FEATURES
- ... EFFICIENT OPERATION
- ... COMPLETELY AUTOMATIC
- ... EASY TO INSTALL
- ... EASY TO SERVICE

... and has passed the latest requirements of the American Gas Association.



Series 700
Coal-Fired, Steel
Gravity Furnace



Series C
Coal-Fired, Cast
Gravity Furnace

THE C. A. OLSEN MFG. CO. - ELYRIA, OHIO

Luxaire

HEATING & AIR CONDITIONING UNITS

A QUICK END TO FIREPOT TROUBLE

because

FIRELINE

*repairs cracked firepots without delay
—without new castings*



Here is a furnace firepot lined with Fireline. The fire bakes this refractory material into a solid, durable, monolithic lining. Saves castings, labor, fuel—withstands heat to 3000 deg. F.

With so much repair business available today, the old method of tearing down a furnace to put in hard-to-get castings will definitely limit your volume. After all, castings are still scarce, manpower is scarce, and there are just so many hours in a day.

With Fireline you don't need new castings. You can stretch available manpower hours into real profits. And besides making more profit yourself, you give the customer a better job at a lower price. That builds future business in any man's language.

WHAT IS FIRELINE?

Fireline is a high-quality refractory moulding material in moist, plastic form which is installed as a complete lining entirely around the firepot. The fire bakes it into a durable, one-piece lining which withstands temperatures up to 3000 deg. F.—hotter than any domestic furnace can attain.

WHAT DOES FIRELINE DO?

Fireline repairs cracked and burned-out firepots—without new castings—without dismantling the furnace. Fireline seals the castings gas-tight. It prevents the escape of gas, odors, and soot into the building. It produces a hotter fire because it radiates and reflects heat across the entire fuel bed which means better combustion.

HOW IS FIRELINE INSTALLED?

Fireline is installed through the furnace door, easily and quickly. Just pound it

into place with a hammer and trim it smooth. That's all there is to it. Fireline is ready to use—nothing to mix—nothing to add.

EVERY FURNACE NEEDS FIRELINE!

Even furnaces in good condition need Fireline because it protects good firepot castings and effects fuel savings. For steel furnaces, it can be moulded to any shape to replace or patch the refractory tile.

Fireline is stocked by leading jobbers everywhere. Ask your jobber for prices and discounts on Fireline heating specialties or write us for free bulletin and descriptive literature including tables to tell you quantities required for furnace jobs of various sizes.

Fireline is installed 1 to 1½ in. thick. The average 22 to 24 in. furnace requires 100 lbs. for a complete lining around the entire firepot. Also used to replace fire brick in steel furnaces.

FIRELINE STOVE & FURNACE LINING CO.



Fireline is packed in 100-lb. drums. Also packed in 50-lb. pails for lining heating stoves, circulating heaters, etc.; and in 5- and 10-lb. cans for repairs, cook stoves, hot water heaters, etc.

IRONSET FURNACE CEMENT



The high-quality cement for setting up new furnaces and re-cementing old ones. Withstands higher temperatures. Will not crack, bloat, shrink, or blister. Gives a high degree of permanence to your work. Try it on your next job and watch it produce other customers for you. Packed in 5- and 10-lb. cans.

FIRE-HEARTH CASTABLE

The ideal refractory for setting stokers, sealing tuyeres, and precast combustion chambers. Also for making furnace baffles. Easy to use: Just mix with water, pour into place, and smooth with a trowel. Sets without heat. Packed in 50- and 100-lb. bags.



1816 Kingsbury St., (Dept. H), Chicago 14, Ill.

Stok-A-Fire Co. ANNOUNCES

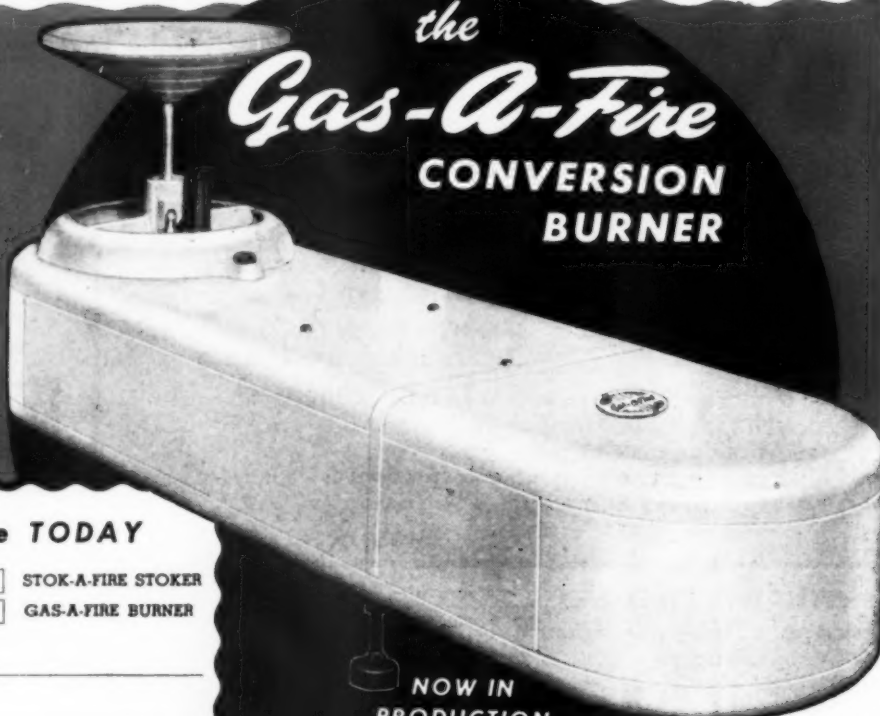
The NEW *Gas* HEATING SENSATION!

★ EASY
TO SELL

★ EASY TO
INSTALL

★ EASY TO
SERVICE

the
Gas-A-Fire
CONVERSION
BURNER



NOW IN
PRODUCTION

• A. G. A. CERTIFIED

Write for Franchise TODAY

Without obligating me in any way, please
send me full information on the STOK-A-
FIRE COMPANY franchise for

☐ STOK-A-FIRE STOKER
☐ GAS-A-FIRE BURNER

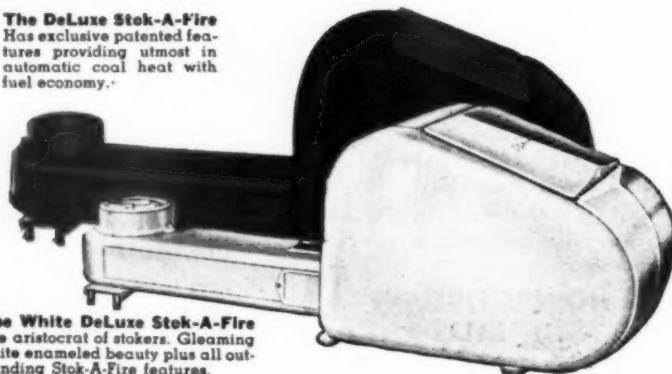
Name _____

Address _____

City _____ Zone _____ State _____

AGAIN—Stok-A-Fire Company steps ahead in giving dealers an extra money-making opportunity. The new GAS-A-FIRE gas conversion burner plus the STOK-A-FIRE stoker enables you to sell practically EVERY automatic heating prospect. Line up with us NOW for priority delivery.

The DeLuxe Stok-A-Fire
Has exclusive patented features providing utmost in automatic coal heat with fuel economy.



The White DeLuxe Stok-A-Fire
The aristocrat of stokers. Gleaming white enameled beauty plus all outstanding Stok-A-Fire features.

Stok-A-Fire Co. 6504 OLIVE BLVD. • ST. LOUIS 5, MO.

FOR USERS (AND POTENTIAL USERS) OF Resistance Welding



Sciaky specializes in the design and manufacture of high quality Spot, Seam, Portable and Flash welding equipment. Consult us on your resistance welding problems.

SCI AKY BROS.
Inc.

Offices and Representatives in principal cities—plants in London and Paris
4915 W. 67th ST. CHICAGO 38, ILL.

If you are interested in the possibilities and scope of the various phases of *Resistance Welding*, you will want to receive these Sciaky bulletins: "Resistance Welding at Work." They are brief, informative and pictorial, and for the most part are devoted to step-by-step analyses of interesting production problems solved by spot, seam or flash welding.

"Resistance Welding at Work" is issued periodically and is free of charge. We will be glad to place your name on our mailing list. Just fill out and mail the coupon below.

Sciaky Bros., Inc. A 05
4915 W. 67th Street, Chicago 38, Ill.

Gentlemen: Please place my name on your mailing list to receive "Resistance Welding at Work."

NAME _____
POSITION _____
COMPANY _____
ADDRESS _____
CITY _____ ZONE _____ STATE _____

**Whatever the call for oil heat
PETRO helps you fill the bill right!**



To meet the needs of different buildings, ranging from the smallest bungalow to the largest skyscraper, Petro offers you a *complete* line of oil burning equipment. Possessing the diversified firing characteristics required, it satisfies today's most exacting operating standards.

Petro Oil Burners are obtainable in pressure

atomizing models handling from 1 to 18 gal. per hr. of domestic fuel oils and in rotary cup models handling from 11 to 145 gal. per hr. of heavy "commercial-industrial" oils. This equipment is distributed through established heating wholesalers in your territory. Write us for the name of the supply house nearest to you.

PETROLEUM HEAT AND POWER COMPANY • STAMFORD, CONNECTICUT

PETRO FUEL OIL BULK PLANTS, DISTRIBUTION TERMINALS AND FACILITIES IN: BOSTON • PROVIDENCE • STAMFORD
MT. VERNON • NEW YORK • LONG ISLAND • NEWARK • PHILADELPHIA • BALTIMORE • WASHINGTON • CHICAGO

PETRO
REG. U.S. PAT. OFF.

MAKERS OF GOOD OIL BURNING EQUIPMENT
SINCE 1903



NOW is Profit-Time

for you on HEAT CONTROL INSTALLATION
... and **CRISE REALLY MAKES IT PAY!**

Summer's the time to put a Crise automatic Control on every customer's hand-fired furnace . . . warm air, hot water steam. Saves up to 1 1/2 tons yearly; wins his gratitude.

CRISE OPENS YOUR EYES

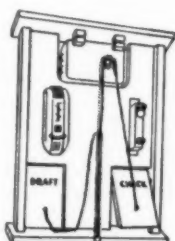
to the *real* money you can make with the right heat control . . . and Crise is right — all-ways!

EASILY INSTALLED.

You serve more customers, quicker.
No servicing, ever.

WHY CRISE PROFITS ARE GREATER

Crise Control's modest price wins greater number of sales . . . means greater total profits. DEMONSTRATE its advantages—then watch the profits roll in!

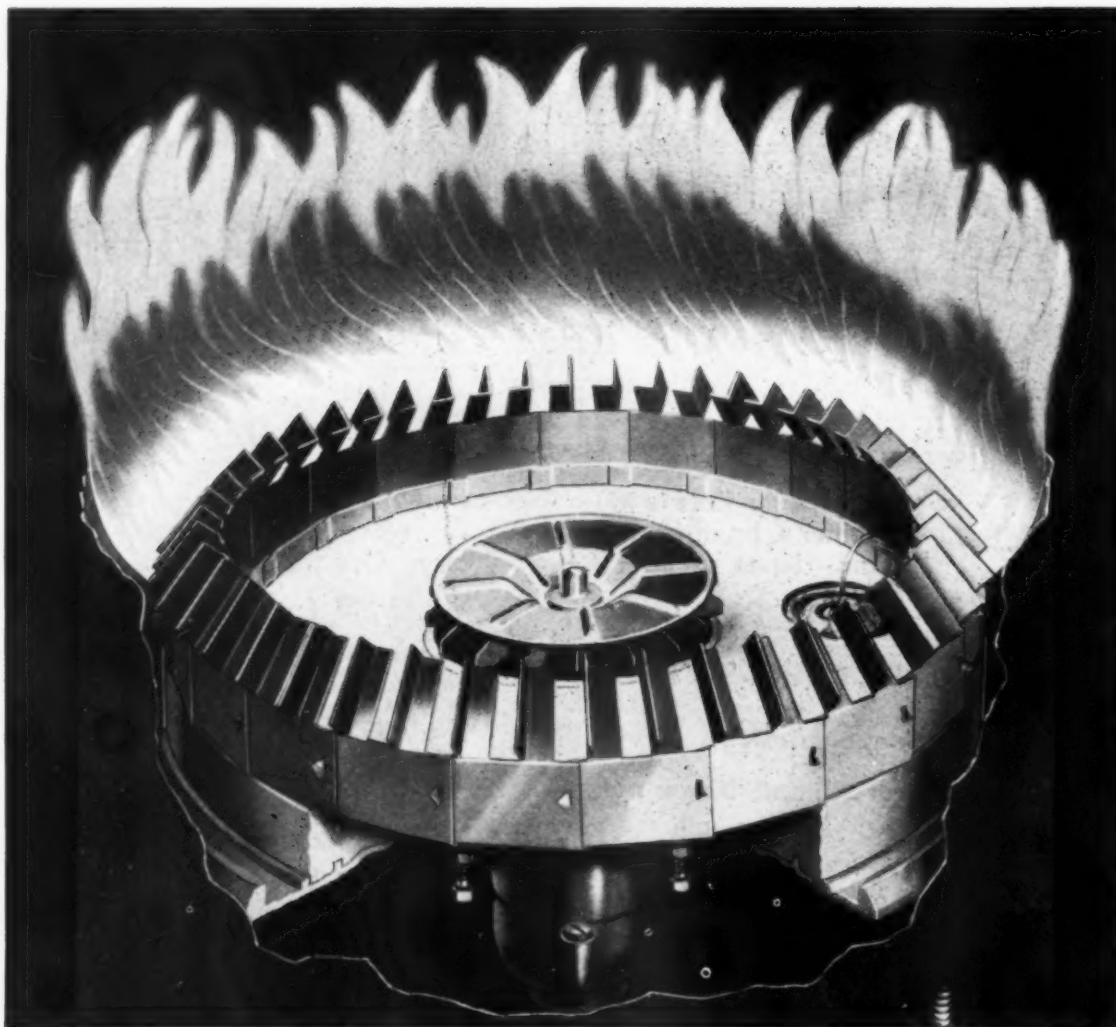


CRISE DEALERS — GET "ACTION"

Get this working Demonstrator from your jobber.
An "Action" salesman that sells . . . in your shop,
at customers' homes.



Toridheet **ROTARY BURNER**



***Built its national reputation for outstanding efficiency
and spectacular economy on performance***

You can't win the reputation that Toridheet Rotary Burner has earned by anything except *performance*. And the performance must be regular and consistent, not occasional. This fact was grasped by the manufacturers of Toridheet Rotary at the beginning of its career. Constant

research and continuous improvement and refinement keep Toridheet in the lead. What this means to the *user* in perfection of service is vital. What it means to the *installer* is expressed in the ever growing national reputation Toridheet has earned among dealers for low maintenance cost.

TORIDHEET DIVISION

CLEVELAND STEEL PRODUCTS CORPORATION, CLEVELAND 2, OHIO

Affiliated Canadian Manufacturers: Conroy Manufacturing Company, Ltd., Catharine St., St. Catharines, Ont.

**OIL BURNERS • OIL BURNER BOILERS • OIL WATER HEATERS
AIR CONDITIONING UNITS • COAL AND GAS FURNACES**

Extra Copper Plus Molybdenum Helps Toncan Iron

Lick Rust

Toncan Iron was originated for one purpose—to lick rust. For nearly 40 years this material has been used to give sheet metal products longer life.

The high rust-resistance of Toncan Iron is not happenstance. It's the result of combining careful research and skilled alloy practice with years of experience.

As a result, Toncan Iron is made from highly refined open-hearth iron which contains a minimum of rust-inviting impurities. With this is alloyed twice as much copper as found in copper-bearing steel. Molybdenum is added to make the copper produce its maximum resistance against rust. As a consequence, Toncan Iron has a uniform rust-resistance throughout its entire cross-section that is not destroyed during fabrication.

Protect sheet metal products by specifying Toncan Iron—the material that offers the highest rust-resistance of any ferrous material in its price class.

REPUBLIC STEEL CORPORATION

GENERAL OFFICES . . . CLEVELAND 1, OHIO

Export Department: Chrysler Building, New York 17, New York



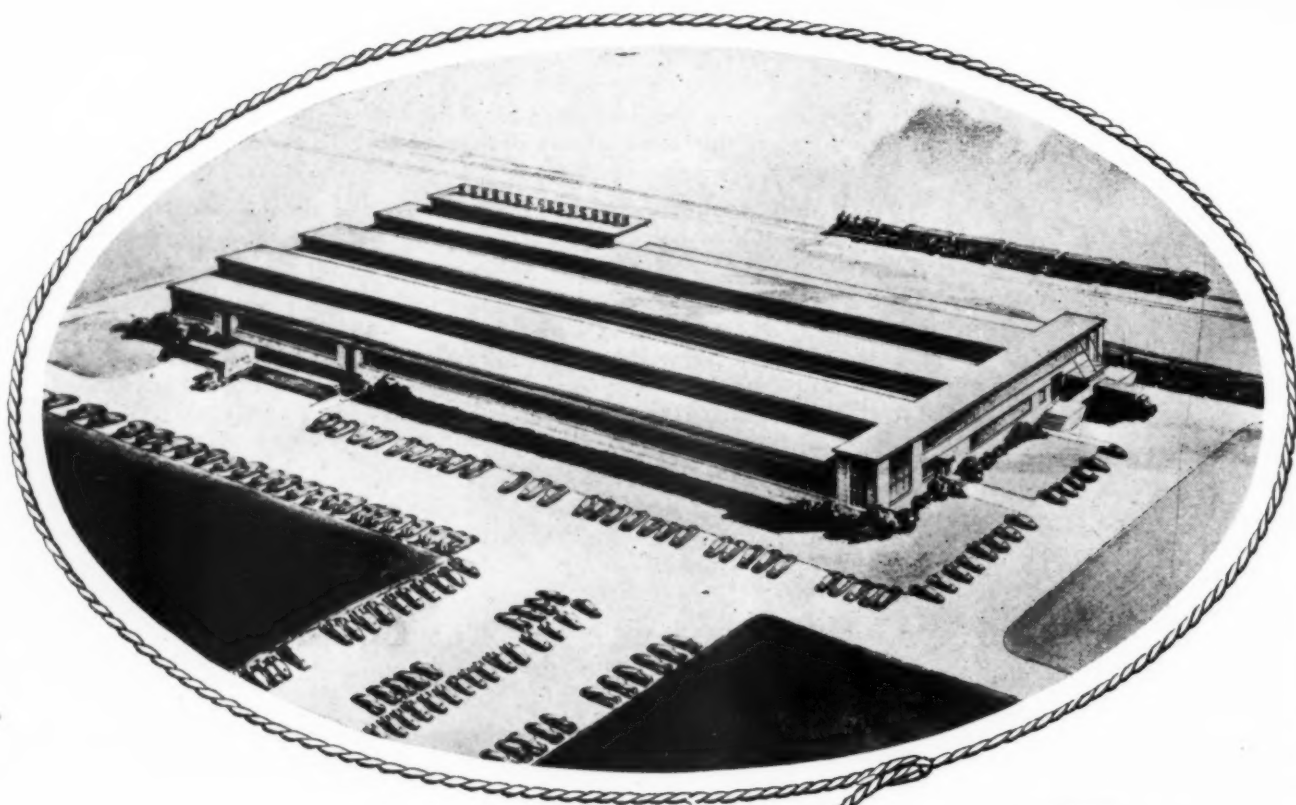
Use the excellent qualities offered by Toncan Iron to build business and increase profits. To find out how, write for Booklet 410, "How Toncan Iron Makes Money for Sheet Metal Contractors and Fabricators."

Republic
TONCAN COPPER **IRON**
MOLYBDENUM

Reg. U. S. Pat. Off.

—for ducts, gutters, conductor pipes, roofing, siding, tanks, ventilators, skylights, hoods, and other sheet metal applications requiring rust-resistance.





NEW BRYANT TEXAS PLANT *Swings* INTO PRODUCTION!

New manufacturing facilities for the most complete line of gas heating equipment in the nation!

Swinging into production this month is the new Bryant Heater plant at Tyler, Texas. The new plant, in the heart of the nation's most rapidly-growing market, is one of the largest manufacturing plants in the South. It will be devoted exclusively to the manufacture of gas-fired equipment.

Already off production lines are the first gleaming white Bryant Automatic Storage Water Heaters. Production is increasing steadily, and soon the new plant will produce space heaters and other new Bryant postwar products. With this new plant and expanded facilities at two plants in Cleveland, Ohio, Bryant will soon make the hopes of thousands to "let the pup be furnace man" a reality.

BRYANT HEATER COMPANY
17825 St. Clair Avenue, Cleveland 10, Ohio
One of the Dresser Industries

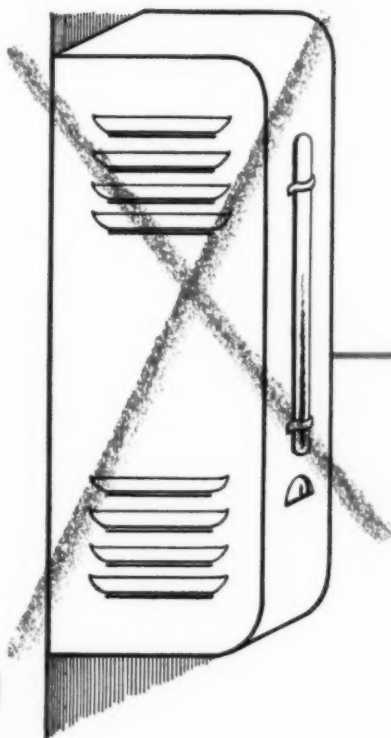


bryant
GAS
HEATING



LET THE PUP BE FURNACE MAN

The most complete line of gas heating equipment in the nation!



Functional beauty....

TRIMTHERM

Accurate Room Temperature Control

6

GENERAL CONTROLS' T-80 Series Trimtherm has set a new standard of accuracy in remote control of room temperatures. Its remarkable sensitivity insures a differential of only $\frac{1}{2}^{\circ}\text{F}$. Its dull chrome cover, streamlined design and flush mounting harmonize with any scheme of room decoration. The Trimtherm is truly an example of functional beauty.

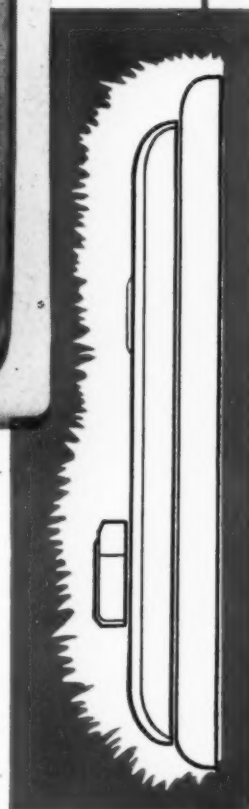
Compare the conventional type thermostat above, where air has to pass through louvers in the housing to reach the sensitive element, with the compact Trimtherm at right, which typifies the ultimate in modern engineering design. A thermostat that lives thermally in the room.

T-80 Series Trimtherm available only in B-60 All-Gas-Control Package Sets. Sets include a B-60 Series Gas Control Valve, Thermocouple Pilot Generator (no outside current required), 30 feet of thermostatic wire and a T-80 Series Trimtherm.

FOR COMPLETE SPECIFICATIONS on temperature, pressure and flow controls for commercial and domestic applications in the Gas Industry, write for Catalog 52-B and Service Manual F1-101, or contact your nearest Factory Branch or Distributor.



Harmonizing dull chrome cover is thermally responsive mechanism, unboxed and exposed to immediate radiant heat and temperature change. Extends only $\frac{7}{8}$ " from wall. Ivory plastic base acts as blanket to thermally isolate instrument from wall.



GENERAL
301 ALLEN AVENUE



CONTROLS
GLENDALE 1, CALIF.

FACTORY BRANCHES: PHILADELPHIA • ATLANTA • BOSTON • CHICAGO • DALLAS
KANSAS CITY • NEW YORK • DENVER • DETROIT • CLEVELAND • PITTSBURGH
HOUSTON • SEATTLE • SAN FRANCISCO • DISTRIBUTORS IN PRINCIPAL CITIES



stainless marquees mean
more profit per job

Volume isn't the whole story. Contractors are swinging, instead, to the profit-per-job view. They say that the high-quality, long-profit jobs—such as marquees for hotels, theaters, restaurants—bring a handsome return and a reputation for good work.

That's especially true now, when materials and labor are scarce. Every sheet metal job must carry its share of profit on your books.

ARMCO Stainless Steel marquees and other decorative work are a shorter

road to this long-profit goal. Look about your own community . . . and you'll see many such jobs waiting for you.

The familiar ARMCO name will help you sell stainless steel for these and other purposes. The attractive appearance of stainless steel is well-known and accepted. Its soft, silvery color blends well with any surrounding construction; gives a handsome look-at-me touch to any building front. Just an occasional washing will keep

this rustless metal gleaming smooth through years of trouble-free service.

And remember, ARMCO Stainless Steel is not hard to work. All you need is regular shop equipment and the "know-how" that we or your Armco Distributor can quickly give you. Your men will take pride, along with you, in the completed job. The American Rolling Mill Company, 3821 Curtis Street, Middletown, O.

EXPORT: THE ARMCO INTERNATIONAL CORPORATION

THE AMERICAN ROLLING MILL COMPANY

SPECIAL-PURPOSE SHEET STEELS • STAINLESS STEEL SHEETS, BARS AND WIRE



A FULL LINE FOR FULL PROFITS

Conco
Coal-fired
Winter-
Airconditioners



Conco
Domestic
Stokers



Conco
Oil-fired
Winter-
Airconditioners

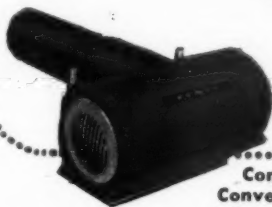


CONCO
heat

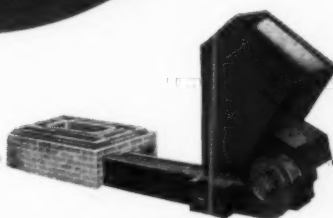
Conco
Gas-Fired
Winter-
Airconditioners



Conco
Conversion
Oil Burners



Conco
Commercial
Stokers



Conco Production Is Of Course Still Limited. Increased Output Is Anticipated Late in 1946.

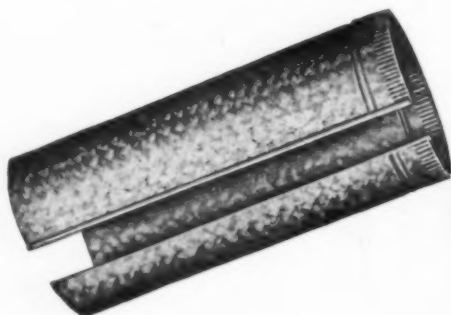
CONCO ENGINEERING WORKS
MENDOTA, ILLINOIS



*Save Hours-
Reduce Costs-
Increase Profits*



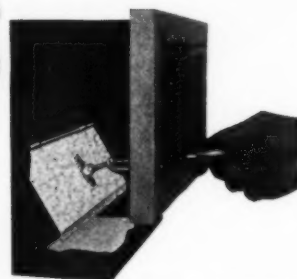
with **MONCRIEF**
SUREFIT FITTINGS



and **MAYN AIR DAMPERS**

- ... Positive in control — Rattle-proof.
- ... Locks automatically — easy to install.
- ... One man balancing — saves money.

Buy Moncrief Forced Air Stackheads with Factory installed Mayn Air Dampers.



Mayn Air Damper in stackhead eliminates Dampers in basement ducts.

**WARM AIR
FURNACES**

**FURNACE PIPE
AND FITTINGS**



**AIR CONDITION-
ING UNITS**

**GAS
OIL . . . COAL**

THE HENRY FURNACE CO.

MEDINA, OHIO

The New Webster Electric

WEBSTER ELECTRIC Thermodrive

for control of warm air flow



Offers both

improvement for new equipment

and large conversion market

● The latest contribution of the Webster Electric Company of Racine, Wisconsin, to the warm air heating field is the new Thermodrive.

Thermodrive is designed to regulate warm air flow through control of fan speed in a forced warm air heating system so as to give more even room temperatures, along with more economical heating performance. It automatically increases fan speed as bonnet temperature increases, and decreases it as the bonnet cools. (Fan speed change can vary as much as 65 per cent from low to high.) A "sample" of warm air is continuously taken from the bonnet and discharged over a thermostatic bellows, which in turn actuates a sliding sheave. This changes the pulley's effective diameter and results in the increased or

decreased speed of the fan and warm air flow.

Thermodrive offers an opportunity to improve the heating efficiency of new equipment, making it still more efficient and salable.

Dealers will find a ready market in the opportunity to install Thermodrive on warm air heating plants already in operation. This market is large, and Thermodrive sales for this purpose are profitable.

Those who are manufacturing new equipment, and dealers who want to install Thermodrive on present warm air heating systems, should secure the complete story of this new unit by writing Webster Electric Company, Racine, Wisconsin.

WEBSTER ELECTRIC
RACINE WISCONSIN



Established 1909

Export Dept. 13 E. 40th Street, New York (16), N.Y. Cable Address "ARLAB" New York City

Where Quality is a Responsibility and Fair Dealing an Obligation

Enduring...Easy Forming...Eye Appealing



They're enduring,

giving long, reliable service on countless different kinds of jobs, because they're protected against rust by a tight coating of pure, high-grade zinc.



They're easy-forming

because the steel base is ductile, easy to bend and to seam. And you can't buy a galvanized sheet with better resistance to flaking, peeling and cracking under forming operations!



They're eye-appealing

because of the full, bright spangles, insuring pleasing appearance in the finished job, and a product which has added sales appeal.

Bethlehem galvanized sheets will give all-round satisfaction! Write or phone for complete information.

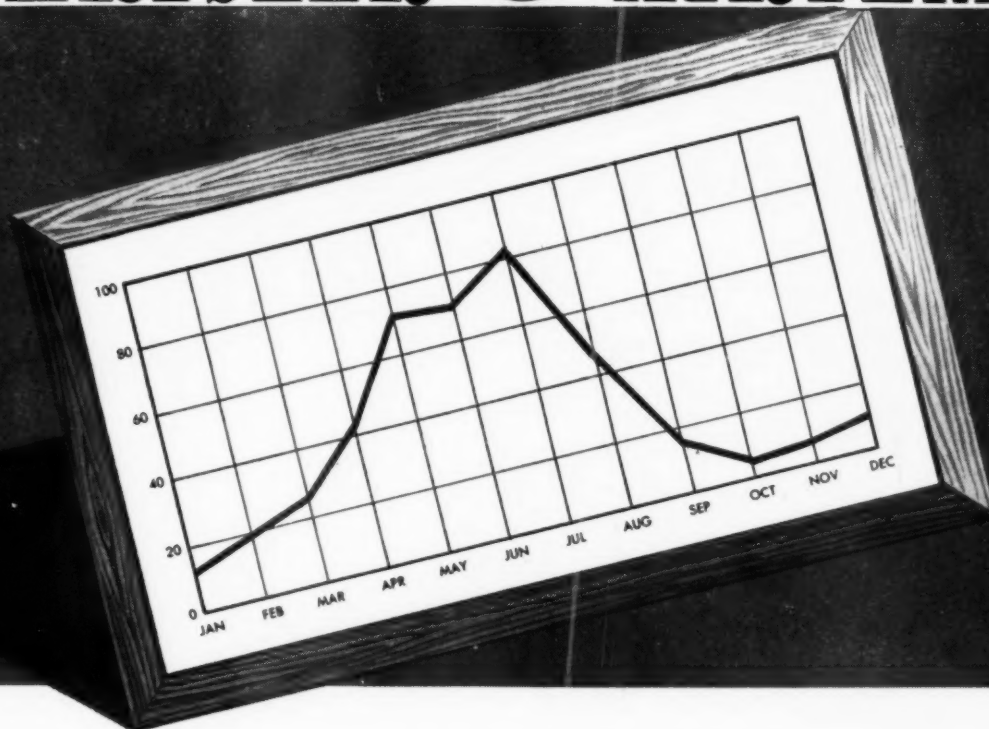
BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

*On the Pacific Coast Bethlehem products are sold by
Bethlehem Pacific Coast Steel Corporation*

**BETHLEHEM
STEEL SHEETS**



CHRYSLER AIRTEMP



Is this a Picture of Your Business?

If you have climbed this steep sales chart mountain and worried in the deep valleys—as many dealers normally do—you know what is wrong with this picture. And you'll agree that it's a difficult way to do business.

Build up the valleys—make it possible for dealers to operate at a profit every month in the year! That's one of the rules in all planning at Chrysler Airtemp. Everything (product development, merchandising, advertising, dealer agreements) is designed with this thought well in mind.

To do this, Chrysler Airtemp has three big lines of products—a complete line of home heating products for all types of fuel, *plus* the famous "Packaged" Air Conditioners, *plus* a well rounded line of compressor and condensing units for commercial and industrial refrigeration purposes.



1, 2, or all 3

Most important is the fact that dealer agreements are written for *one, two or all three* lines to help Chrysler Airtemp dealers cut sharp peaks and valleys out of their picture. Here's opportunity for real profit every month in the year!

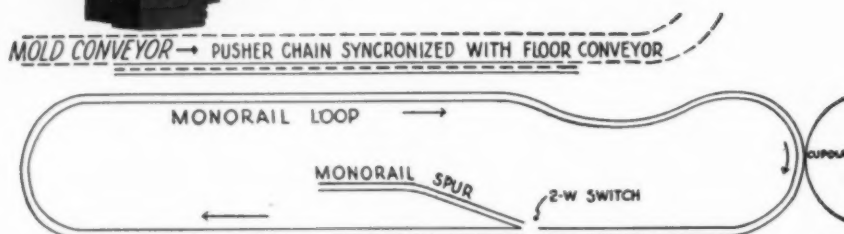
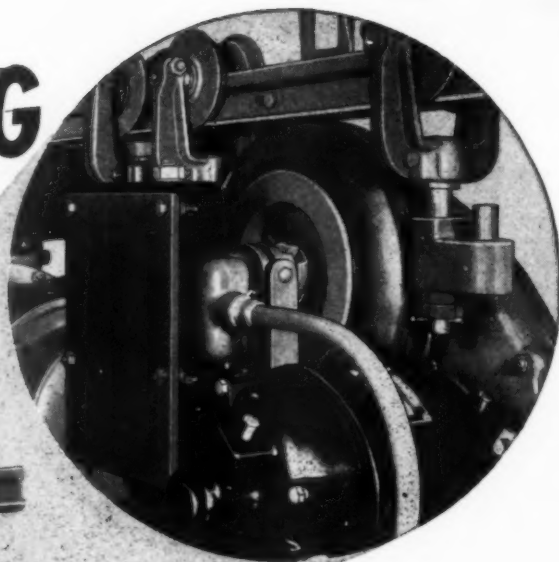
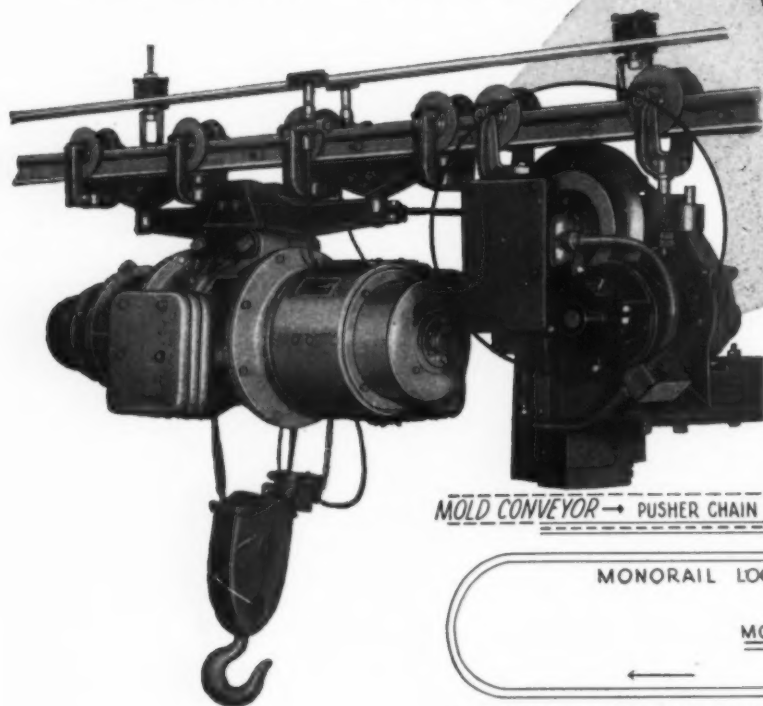
If you believe the above chart fits your business in the years just ahead, it will pay you to investigate Chrysler Airtemp. Write Airtemp Division of Chrysler Corp., Dayton 1, O. In Canada: write Therm-O-Rite Products, Ltd., Toronto, Ont.



A I R C O N D I T I O N I N G
HEATING • COOLING • REFRIGERATION

FASTER POURING

with "Free-Wheeling"
AMERICAN MONOTRACTOR



LAYOUT OF POURING LOOP FOR CYLINDER HEAD LINE

Here is another example of American MonoRail engineering with the American MonoTractor.

A rubber drive wheel propels a heavy bull ladle from the cupola to floor conveyor carrying flasks. When the unit reaches the pouring area, clutch disengages the MonoTractor drive wheel so that carrier unit can be picked up by an overhead pusher and moved along over the flasks at

the same speed as the floor conveyor. This enables the operator to concentrate all efforts on pouring. No worry about "keeping up" or "getting behind" the flask—operator forgets about horizontal movement and is able to pour metal faster and more accurately.

This principle is applicable to many conveyor lines for process in motion. Let an American MonoRail Engineer go into further details.

THE AMERICAN **MONORAIL** COMPANY

13133 ATHENS AVENUE • CLEVELAND 7, OHIO

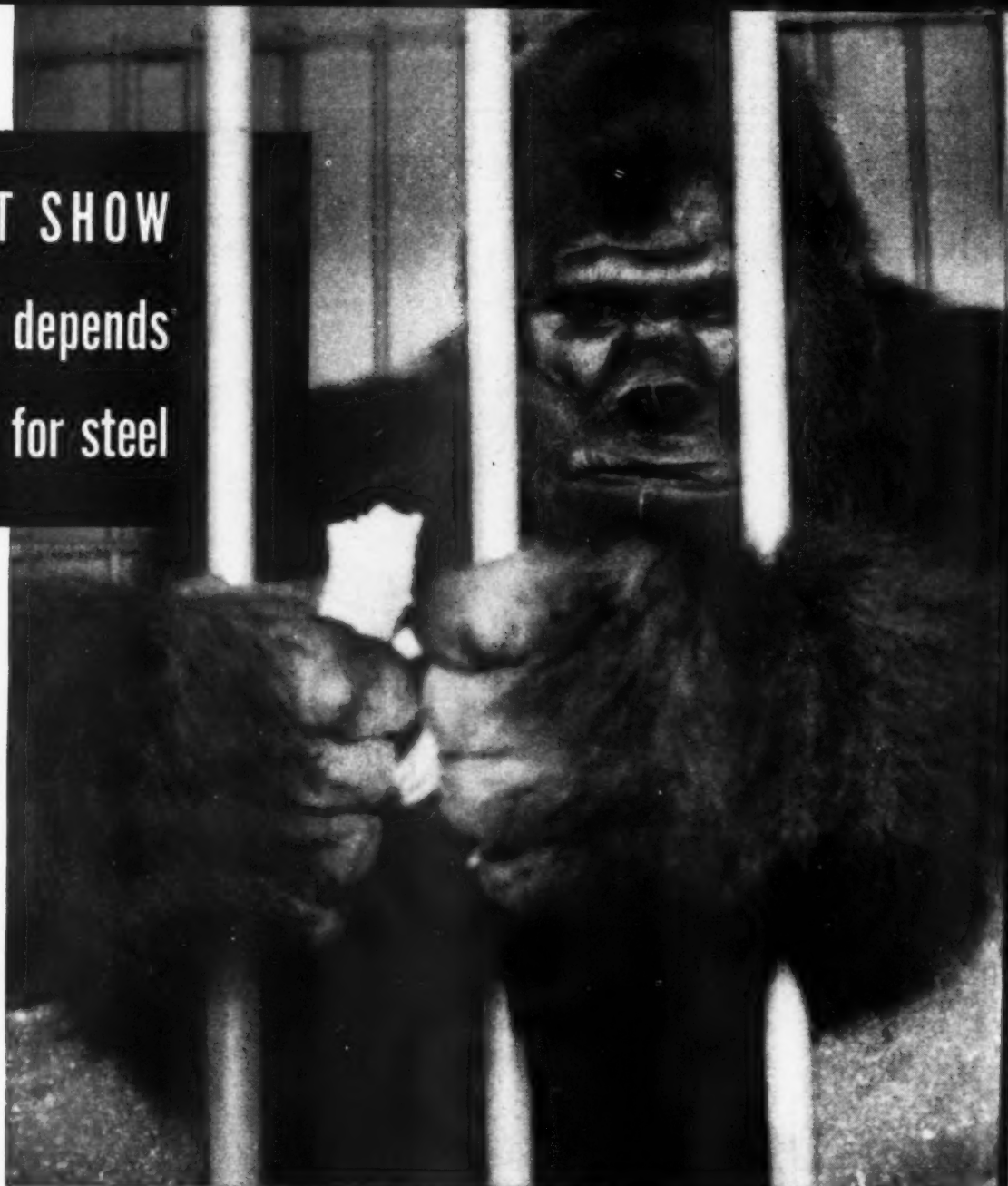


MANUFACTURED BY

THE WISE FURNACE CO.

AKRON 8, OHIO

**"GREATEST SHOW
ON EARTH" depends
on Ryerson for steel**



Photograph courtesy Ringling Bros. and Barnum & Bailey Circus.

Even the circus needs steel from stock, not only bars but structurals, tubing and reinforcing steel. All are products that Ringling Bros. and Barnum & Bailey secure from Ryerson stocks.

Whatever *your* business and whatever *your* requirements, you'll also find the nearby Ryerson plant a time-saving steel source. While many sizes are missing because of the steel shortage, stocks are improving daily. And often, when a needed steel is not available the Ryerson salesman can suggest a practical alternate.

Combined with growing stocks, Ryerson facilities for cutting, bending, threading, riveting and punching, help

to assure prompt delivery of steel exactly as needed. Today we cannot say, "every size of steel in stock for immediate shipment." But, all things considered, we can give surprisingly prompt, dependable service on many products.

Another advantage of Ryerson steel service is the strategic location of the eleven Ryerson plants. Steel needed for a distant operation can be ordered from the plant near your headquarters and shipped from the plant near your job. Why not take advantage of this extra service, at no extra cost, next time you need steel? Phone, wire or write the nearest plant.

RYERSON STEEL

Principal Products: Bars • Structurals • Plates • Sheets • Tubing • Alloy Steels • Allegheny Stainless • Tool Steel • Inland 4-Way Floor Plate

JOSEPH T. RYERSON & SON, INC.
Steel-Service Plants at: Chicago, Milwaukee, Detroit, St. Louis, Cincinnati, Cleveland, Pittsburgh, Philadelphia, Buffalo, New York, Boston



Production is the Only Way to Stop Inflation

PERHAPS the most encouraging statement released to the public recently—and certainly the most important statement made to business—is the declaration of President William Green to his AFL workers that “the best way to stabilize your wage dollars is by helping to increase the volume of production which can wipe out the scarcities and the danger of a runaway inflation.”

It is to be hoped that this masterly statement finds support from all the officers and members of all the trades in AFL.

This statement, if accepted by the officers and members of the AFL, means that union labor proposes to work harder; to produce more per man hour; to have fewer wildcat strikes; to reduce the loss of time away from the job.

Perhaps one motive behind this statement is self interest. But it is also to be hoped that responsible labor leaders realize that the wage increases granted and obtained so far this year will very quickly be eaten up by higher living costs; realize that higher prices inevitably follow higher wages; realize that wage increases and price increases can chase one another up the spiral until a runaway inflation is upon us.

OPA or no OPA, prices are bound to rise. This was demonstrated during the period when OPA was out of business and is now being demonstrated under the revived OPA as price increases are granted under the regulations of the new OPA law.

The only way by which the spiral can be stopped is through increased production per dollar of wages. Wage rates by themselves are meaningless. If a man produces enough he can be paid more and more. Wages do not stand alone, but must bear a relationship to total costs of the product ready for sale. If costs can be reduced through greater output per man-hour of labor, wages can go up proportionately.

Figures recently released show that total industrial production is now high—higher than pre-war in many industries—but still far short of existing demand.

But production per man-hour—the final figure which means anything in wage rates—is lower than pre-war. In our own industry there is no agency to gather data on production per man-hour, but the statement

that man-hour production is only approximately 70 per cent of pre-war production has been made so frequently that the figure must have some foundation in fact.

Authentic data on production per man-hour is available for other industries. In the automobile industry man-hour production is stated to be down to 50 per cent of pre-war. Boots and shoes, clay products, flour, printing and publishing, paper, coal and others show only 50 per cent production per man-hour or lower.

Some industries with official figures show higher per man-hour production than pre-war—baking, glass, woolens, paints, rayon, tobacco, and others.

Of all industries, the construction industry has—rightly or wrongly—been accused of being the worst offender on production per man-hour. The building trades have been called stupid; they have been accused of keeping labor costs high; of declining to take and train the hundreds of thousands of apprentices so badly needed; of restricting output, and of being a party to practices which slow building.

True or not, factual or gossip, it is said that the unions are discussing a no-strike pledge for the next few months; are carefully talking about longer hours (with overtime) to raise production fast; of suspending for the time being all talk about a shorter work week; of even sending officers and key men to college to learn the fundamentals of production and business economics and costs of doing business.

Even if these extraordinary efforts are only for the purpose of getting out from under the public's blame for higher living costs or to raise production so wage increases can be asked in 1947, they are still admirable. The unions actions will undoubtedly bring better working habits among the mechanics; they should raise the general efficiency and skill among the mechanics; they should allow employers to rest easier without fear of sudden strikes or wildcat strikes or unforeseen wage increase demands.

The only way to prosperity and higher living standards and higher wages the world has yet found is the American system of private enterprise, which brings more goods at lower and lower unit costs with higher and higher wages to enable people to buy. But the three must go together.

Arnold Kruckman's

Washington Letter



Warm Air Furnace Ratings Established

AFTER a long period of indifference, the Federal Government has focussed its mercurial interest on the warm air furnace industry. On August 6th the CPA issued Direction 18 to PR 28 which enables the makers of warm air furnaces, together with six other industries, to obtain, by special preference, a supply of iron castings and steel during the fourth quarter, October, November and December. On the same day the CPA announced these "producers of a small list of highly essential products" had been made eligible to get CC ratings to procure sufficient "quantities of iron castings and steel to maintain a minimum economic operation," and that this effect had been accomplished by another amendment to PR 28. In addition, to make certain that they would not be denied the carry-over of self-certified orders placed for delivery in September, but which could not be delivered in September, CPA issued Direction 13 to M-21 which gave CC ratings to the unfilled orders, and validated the demand of the highly essential industries that these orders be delivered by the mills in October. Finally, apparently, in order that no mill or warehouse, or any other intervening supplier, could produce a legalistic objection to compliance with these very special preferences, CPA amended Direction 13 of PR 1, which wiped out the suspension of certain rated orders on September 30. In a sense this complicated process of making sure the warm air furnace industry and its six industrial associates will get castings and steel is highly significant as a marked recognition of the desperate need for the products; but, likewise, the intricate proceeding illustrates the tangled skein these mortals in the legal sections of Government can weave in piling redder tape upon red tape.

What the Ratings Cover

The CC ratings apply in securing castings and steel for floor and wall warm air furnaces, for furnace pipes, fittings and ducts, and registers and grills; also for bath tubs, radiation, lavatories, sinks and sink combinations, electrical wiring devices, builders' hardware, low pressure boilers, and screwed pipe fittings. There is food for thought in the process by which the preference ratings must be obtained. It was required that applications for CC ratings be made on CPA Form 541-A; next, a separate application had to be made for a rating for fourth quarter deliveries, on Form

CPA-4491; presumably all these forms had to be filed in August. This reporter does not know just how rigidly the CPA Steel Division enforced the August limitation. It is known that the steel mills can turn down your priority if they receive the order less than 30 days before the first of the month in which the metal is to be shipped. For this reason it has been assumed that in many cases more rapid delivery may be obtained from warehouses.

How The Rating Benefits You

That term "minimum economic production," used in the CPA announcement, is the high-brass English manner of saying the manufacturer cannot do business without a priority. Off the record, we are told here that under the most advantageous circumstances the applicant for a priority has about 70% certainty of getting it. Under normal conditions in CPA, even in these abnormal circumstances, approximately 60% of the appeals for priorities are filled. It may be illuminating to learn that fully 80% of the applications came from plants employing 50 persons or less, and that approximately 10% came from those employing 250 or more. They tell us that often those who are very definitely entitled to priorities miss out because they supply neither clear, nor exact information in filling out the forms, which, incidentally, may be had at any Post Office, Department of Commerce Office, or CPA, or NHA office. If you are uncertain about the answers, ask the man in the nearest CPA, or NHA office. They always want to know if you tried to get what you want without priorities, from whom, where, and on what dates; and they insist they must know whether or not you can use substitutes, or materials that are more plentiful—they insist upon specific answers even if it is painfully obvious you can only use castings and steel. You must patiently answer that you have no steel, or that you are almost at the vanishing point of your supply, and you must say definitely and clearly that you cannot do business without a priority to obtain the material you want. It always makes an impression when the applicant unemotionally makes plain his business will be curtailed without priority help.

Letters Will Help

Despite what you might be told "in the field," by the employees of Government, it is everlastingly true that

supporting letters will mightily help the application. These people in Washington used to pretend they looked down their noses at Congressmen, and other persons of influence. They do not take a lofty attitude now. They sit up and take notice when you have a letter from your Congressman; they run to meet you when you bring a letter from your Senator. And they respect the background of letters from the local Chamber of Commerce, from your customers, and from your employees; from any one or any organization that indicates substance, and enables them to sense the regard in which you are held in your community and in your industry. It has taken the Steel Division a long time to persuade Jack Small that the metal should be rationed. He still does not like the idea. It is a sort of grudging concession to the inevitable. The steel mills like it less than Small. For these reasons they all will be meticulous in watching over the t's you have not crossed, or the i's that are not dotted. All things being equal, you should be able to pry loose the priority within a week, after you make application. At the utmost within ten days.

There is some chance that 25% of steel may be set aside to supply any legitimate small business operator. The Department of Commerce is advocating this procedure.

The Steel people in CPA are devotedly sold on the steel plants' idea that "voluntary allocation" is the only fair system. Department of Commerce says the "voluntary" system is fair to big users, but it gives the smaller business man little steel, either from the mills or the warehouses. Commerce insists that there is now enough steel to give the big users a reasonable supply and that they can afford to surrender some of the volume to the smaller producer.

Humanize The Standards

In passing, the reference to the Department of Commerce brings to mind that Henry Wallace has at least one idea which seems very useful to smaller business. He has long earnestly desired that the preciously high-brow crowd of scientists and technologists at the National Bureau of Standards should become human. They have functioned for a long, long time in a sort of vast ivory tower, remote from the hurly-burly of the life of those who fight to live in business. They have carried on their admirable work in the serene atmosphere of scholasticism, with a backdrop of the very large corporations. It is natural the National Bureau of Standards should feel this affinity to the great combinations because limitations hamper its work and its ideas. Moreover, for years the National Bureau of Standards has been regarded among the technicians and scientists as a stepping stone to solid and perpetual jobs with the Bigs. It always is host to a hundred or more investigators from the laboratories of the great corporations and works very closely with them. There is nothing remotely improper about all this, but it does rather place the needs of the smaller business man outside the pale. Wallace wishes to make the National Bureau of Standards less aristocratic, more ordinary, and wishes to place its services right in the lap of the smaller units in industry. In a general way, Wallace wishes to do with Standards what they do with their four Agricultural Laboratories in the Department of Agriculture. Whatever may be the shortcomings of this huge segment of the Federal Government, the Laboratories give everything they obtain to all farmers, smallest as well as largest, and what they develop has been of tremendous value to the farmers.

Wallace wishes to supply the ordinary business man from Standards, low-cost testing facilities, free technical help, and many other services that will make the activities in the Bureau less potteringly academic and more realistic, and probably often less interesting to the scientific perfectionist, who has long controlled the Bureau of Standards. Wallace is doing something about it and there is some likelihood that he will accomplish his ends.

Release of Materials

It is reported here that more and more warm air furnaces and furnace pipe, fittings and duct work is coming out of war surpluses since CPA in late July issued a directive channeling all such surplus items into the Veterans Emergency Housing Program and the construction program of the Veterans Administration. CPA also is expected shortly to recommend that the entire Government copper stockpile, 300,000 tons, be utilized during August, September and October for the benefit of the Veterans Emergency Housing program. The metal would be made available for flashings, gutters, downspouts, weather stripping, water pipe and water storage tanks. From the Department of Commerce recently came a statement that the latest survey again revealed repair and replacement of heating equipment accounts for the largest share of expenditures by home owners in the West and the second largest expenditures on homes in the East.

Jack Small, expected to leave CPA soon, reported in his July production statement that there was a reduction in the production of warm air furnaces in June. The decline is registered as 3 per cent, from 49,600 in May to 48,700 in June. He estimates the July production at 55,000. Labor is reported as one of the major limitations to more production. The lack of copper magnet wire and silicon sheet steel still holds up expansion of the plant facilities to make fractional horsepower motors. Warm air furnace producers have benefited by increases in the production of larger sized motors, 1/20 to 1 h.p. This is reported to have released almost 200,000 motors of 1/6, 1/4 and 1/3 h.p. for stokers and fan blowers, to be used in the Veterans Emergency Housing program. In June unfilled orders for fractional horsepower motors was reported by CPA as approximately 34,000,000, roughly 22 months' production. Some officials insist the figures are heavily padded, and others insist the actual need is greater than the report indicates. There appear to be no figures actually even approximately correct. These and other components are reported to be the chief causes why warm air furnace producers are not entirely happy. If it were not for the uncertainty of components, the impression in Government quarters is that the warm air furnace industry would be in a better position than it has been for several years.

Construction Moratorium Analyzed

The recently announced 56-day moratorium on all construction, public as well as private, including a cut of \$900,000,000 in Federal construction, is not taken too seriously in the Capital. It has aroused considerable resistance in the Department of Interior, which has many reclamation and power projects, all of which would be cut deeply. It is generally assumed that when the showdown comes the gentlemen in charge of the various programs will trim slightly here and cut off a bit there, but on the whole will keep up the tempo of their disbursements on the plea that it would be de-

(Continued on Page 130)

Sales Control and Analysis

By Arthur Roberts

IN the article in the July Artisan we discussed the first two of five forms required in an adequate sales control system. In this article we take up three remaining forms.

Sales Analysis Chart

The Sales Analysis Chart, Form No. 3, provides monthly sales statistics to guide the dealer from every angle, including territorial sales analysis. If salesmen are making too few sales, presumably because they are rushing interviews or are weak closers; if selling or advertising expense is too high for sales volume; if window displays have dried up as a source of sales; if too few demonstrations are given in proportion to qualified prospects, the Sales Analysis Chart discloses these facts and others so that the necessary adjustments may be made.

The Daily Report

The Daily Report, Form No. 4, in the modern sales control system offers another improvement over the

old-fashioned sales report in that it provides an automatic and cumulative total of each salesman's work to date; this enables the dealer to keep close track of his outside salesmen, without going over a mass of records. Interviews, results of interviews, call-back dates, and other pertinent information is recorded—a precise picture of the day's selling routine in figures and facts for current consumption, also for use later in a statistical way on the sales analysis chart.

The salesman should enter the name and address of every person interviewed on this form. A mere contact is not an interview. The salesman must have been given an opportunity to discuss his wares.

Under "Result of interview," state just what transpired, the nature of the competition, whether a call-back was arranged, etc. Put checks in the last six columns. The column "Qualified prospect" will show a check only if this is the first call, otherwise, leave blank. If this column is checked, the name of the prospect is carded. This saves a great deal of time and money for salesman and dealer. Only live prospects are carded.

SALES ANALYSIS CHART

Advertising Budget		Quota	Month	
Advertising Expense		Sales	Selling Expense (Includes drawing accounts and allowances to salesmen)	
Salesmen working				
Source	Sales	FHA Sales	Allowances	Analysis of Selling Effort
Canvass	\$	\$	\$	Canvass contacts
Phone				Qualified prospects
Direct Mail				Call-backs
Service lead				Demo's given
Window Display				User leads procured
User lead				Prospects Carded
Newspaper Ads				Prospects Killed
OC list				Night Calls
Outdoor ads				Active Cards in file
Showroom				Unit Sales
Total				

Daily Report

[illegible]

Results are summarized at the bottom for quick review. The "Totals for the day" line shows the total of sales, by type of sale: "BTU's," which in this case means "Bought through Users;" "User Calls;" "Contacts" and the total for each item in the check columns. "Sales" and "BTU's" are compiled from the "Result of Interview" column.

Each time the salesman talks to a person about his wares, he places a "tally" mark in the space, "Canvass contacts." Add the tallies at the end of each day and place the total in this space. This column, right beside "First Call Interviews" gives a quick comparison of the salesman's efficiency because it shows the ratios of interviews to calls. The total activity to date shown on the previous day's report should be carried forward and placed on this line, then add to this figure, the day's total, to get the "Total activity for the period to date." The figures on this line should be transferred to tomorrow's report forms in advance of use of the next day's form.

As this form is set up, it is a valuable record and basis for analyzing sales activity. All details are there. It is a big aid to salesman as well as sales director. Weaknesses in either the sales story or the work done are discovered from an analysis of these reports, and then an effort can be made to correct them. The salesman's time and effort is his capital in the business of selling warm air and air conditioning installations. They should be made to produce the biggest possible return the same as cash or stock on hand.

Customer Card File

The Customer Card, Form No. 5, is an example of the evolution that has taken place in the sales control system since prewar days. A customer file should be exploited as energetically as a prospect file. This prevents salesmen from forgetting old customers, as too many salesmen do. Old customers are first-line prospects for other products sold and an excellent source of user leads. This card may be filed alphabetically or by date, if the salesman can qualify the customer regarding the next probable purchase and date, in which event, the card is filed to come up for action at that time, similar to the procedure with the prospect card.

The "Transcript Of Sales" section on the right of the card is recorded for ready reference in case of misunderstanding regarding settlement and to give the salesman, when following up the customer for additional business, an idea of the merchandise, installation or service purchased previously and the price paid, also the size of the trade-in allowance if any. By referring to the Customer Card, the salesman can tell when going after repeat business or plus sales whether he will be able to satisfy the customer with a limited trade-in allowance or whether the customer will demand the limit; whether the customer pays on the dot or is slow pay; whether the financial arrangements were long-term or short-term, etc. The Customer Card also carries valuable information for the

NC ☐

CUSTOMER CARD

OC ☐

Name

Address

Phone

Units

Date Sold

Salesman

Financed through

Date

Pays out When

TRANSCRIPT OF SALE

Selling price

Less trade-in allowance

Net selling price

Installation fee

Accessories

Finance charge

TOTAL

Date delivery or installation

What is customer likely to buy next ?

When ?

statistical build-up of the "Sales Analysis Chart."

Summary

The forms of a well-devised sales control system fit together to produce a perfect picture of selling effort versus selling results versus selling possibilities. Forms may be printed, mimeographed, multigraphed or typewritten in carbon. "Prospect Cards" and "Customer Cards" are more adaptable in size 4x6 or 5x7 for filing in cabinets. The Prospect Register, Daily Report and Sales Analysis Chart are usually kept in looseleaf binders.

Do not be misled by the assumption that sales will come so easy in the postwar period that all you need

do is sit back and take orders. There will be plenty of business, but there will be plenty of competition too. Sales resistance has been practically nil during the war and therein lies a hazard. Many sellers have gone soft on salesmanship and they must get back to selling or they will miss many postwar profits. An adequate sales control system is essential to effective postwar selling. The sales control system outlined in these three articles, March, July, August, 1946, A. A., gives the fundamentals of operation and has been devised after analyzing many systems used by merchandisers in the past. No warm air heating dealer need use this system "as is." Make the necessary changes to conform to your business needs.

Iron Lungs to Fight Polio

AS AN emergency measure to help combat the severe polio epidemic which has struck Minneapolis, one of the industries in that city has undertaken the manufacture of iron lungs. The first pilot model has been completed and is undergoing tests at this writing.

The project has been originated by Waterman-Waterbury, a Minneapolis furnace manufacturer, on the suggestion of the Andrews Heating Co. Harry G. Cross, president of Waterman-Waterbury, has stated that if necessary they will produce 50 to 100 machines, should the emergency warrant. While the iron lung is covered by patents, production facilities for the machines are totally inadequate to produce the numbers that could be put into operation in the polio epidemic. The position of Waterman-Waterbury is that they are producing the units as a public health service in an attempt to save lives and thus their patent infringement, if any, is not commercial.

Most of the parts for the first lung were rolled out of sheet metal and fashioned from stock on hand, but several other firms offered specialized assistance in the project. Durkee-Atwood stopped their regular production lines to turn out the sponge rubber and the rubber diaphragms; Crown Iron Works produced the plexiglass windows; Marshalltown Manufacturing Co., Marshalltown, Iowa, contacted by telegram, sent a pressure gauge by special delivery; Salisbury-Saterlee provided a mattress; a leather flutter valve came from John Friend Glove Co., and a connecting rod from the Champion Motors Co.; Central Metal Polishing Co. donated the nickel plating, and the wiring was furnished by Superior Electric Co. All these firms are located in Minneapolis with a single exception.

The iron lung is a standard type machine but for the fact that it will accommodate two children, in accordance with a suggestion of H. F. Hamilton, chief engineer at University hospital.

NEWS SUMMARY OF THE MONTH

Price Control Reinstated

OFFICE of Price Administration announces that all business industries, as well as buyers and sellers, covered by price control schedules, regulations or orders on June 30 are now automatically subject to these same schedules, regulations and orders.

All materials and services in the building materials and construction field, therefore, revert to the ceiling prices that were in effect on June 30, 1946.

The new Emergency Price Control Act does call for certain modifications of the existing price control program and these adjustments will be made in interim orders as quickly as it is possible to do so.

Compensation May Be Added

The dollar-and-cent amount of compensation paid by employee insurance and pension benefits may be added to the ceiling prices of construction services and sales of installed building materials. This amendment does not affect such prices established by area orders. The provision becomes effective July 26, 1946.

Automatic increases of the dollar-and-cent amount of approved increases of labor costs have heretofore been authorized by OPA for this industry. These increased labor costs were defined to include additional payments for Federal old age benefits, unemployment compensation taxes, workmen's compensation or public liability insurance. This provision now has been extended to include payments to employees for insurance and pension benefits, where such payments are found to lie in a reasonable amount of the Wage Stabilization or Wage Adjustment Boards.

(Amendment No. 5 to Revised Maximum Price Regulation 251—Constructive Services and Sales of Installed Building Materials; effective July 26, 1946.)

Oil Burners Uped 5.5%

The maximum prices for domestic oil burners have been raised 5.5 per cent by the Office of Price Administration, effective July 26, 1946.

The increase was the second since V-J Day and brings the price level 15 per cent over the industry's October, 1941, prices.

In order to compensate for their increases in acquisition cost, resellers are permitted to increase their maximum prices in existence on June 29, 1946, by the resulting percentage increase in their costs.

(Amendment No. 24 under Section 2.4 of Order No. 48 under Maximum Price Regulation No. 591—Specified Mechanical Building Equipment; effective July 26, 1946.)

Check These Wage Rulings

THE recently signed bill extending OPA until June, 1947, also places back in effect the regulations on wages of the National Wage Stabilization Board. The bill does, however, extend the hope that governmental dictation over wage increases and rates for the products under OPA control and for the construction industry may stop prior to June, 1947.

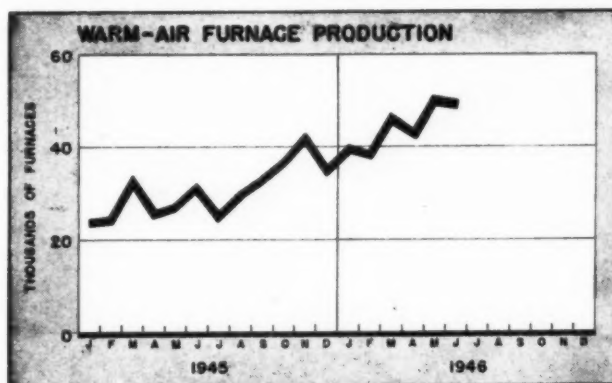
For the time being NWSB will continue its regulations over (1) wage increase and decreases in salaries under \$5,000 per year; (2) rates established in new shops or plants or for new jobs in existing plants; (3) wage increases in the building industry.

Any wage increases or decreases put into effect from June 30 to July 25, when the OPA bill was signed, must be rescinded.

Now, as before June 30, wage increases cannot be used as a means for obtaining price increases unless such wage increases are approved by NWSB. This applies to industries which are subject to price control.

Warm Air Furnace Production

PRODUCTION of warm air furnaces declined slightly in June, being estimated at 48,700 in comparison with 49,600 in May. The production curve for 1945 and six months of 1946 is shown. National Housing Agency, responsible for these figures, believes this decline is normal for hot weather and scarcities of materials. Also that priorities should help obtain steel sheet and iron castings, but July production is likely to be curtailed by vacations, etc.



NHA

Pay Only Authorized Wages

WITH restoration of price controls and extension of the Stabilization Act of 1942, contractors are again required to pay only authorized wage rates to building mechanics. To pay more than schedules approved by the Wage Adjustment Board is illegal, and government officials have already started an investigation of payrolls of contractors reported as being in violation of the regulations.

It is announced by Arthur D. Hill, Jr., chairman of the Wage Adjustment Board, following consultation with John R. Steelman, Director of Economic Stabilization, that management and labor must revert to approved wage rates in effect on June 30 if wage increases have been put into effect since that date.

Mr. Hill's statement was as follows: "The Act restoring price controls and extending the Stabilization Act of 1942 provides that all regulations, orders, price schedules and requirements under the Emergency Price Control Act and the Stabilization Act which were in effect on June 30, 1946, shall be in effect in the same manner and to the same extent as if this Act had been passed on June 30, 1946. This means that only price ceilings and legal wage rates in effect on June 30, 1946, can be charged and paid after July 25, 1946, the date on which the President signed the Act.

"Management and labor who have placed into effect wage increases or wage decreases since June 30, 1946, must revert to the approved wage rates in effect June 30, 1946. Wage rates other than those in effect on June 30, 1946, must be approved by the Wage Adjustment Board before they may be put into effect.

"The Wage Stabilization Board has announced that no proceedings for violation will be instituted for wages paid in the period July 25, 1946, to August 10, 1946, on the condition that application for approval of any higher rate than legally paid on June 30, 1946, has been filed with the Wage Adjustment Board during that period. Any continued payment after August 10 of unapproved rates will be the subject of enforcement proceedings."

Stoker Status

THERE are today over one million stokers in operation in the United States, says Stoker Manufacturers Association, and 80 per cent of these installations are in homes and small commercial buildings. The following is a summary of installations by regions in the United States:

	Per cent
New England States	4.05
Middle Atlantic States	13.19
Southeastern States	2.37
Southern States	12.04
East Central States	44.12
West Central States	14.64
Western and Pacific Coast States.....	9.59
Total	100.00

Inventory Limitations

TO prevent hoarding at the factory of goods in hopes of higher prices, the civilian production administration on July 17 clamped inventory controls on manufacturers.

Simultaneously CPA tightened its control on the supplies of 27 materials and parts which manufacturers may keep in inventory. This is to prevent users from buying them up and holding them as a hedge against rising raw materials prices.

The goods affected include galvanized ware; miscellaneous electrical appliances, and the following building materials: Asphalt and tarred roofing; building board made from wood pulp, pressed paper, or vegetable fibers; gypsum board; gypsum lath, metal windows; cast iron soil pipe; metal plastering base; insect screen cloth.

The materials and parts which must be held to "minimum practicable working inventory" limits—and which previously were exempt from such limits—in-

clude:

Machine tools, capital equipment, abrasive products, bending machines for pipe or plate, foundry machinery, machine tool and metal working attachments, metal cutting tools, portable metal working machines and tools, metal working presses, power driven shears and punches, and jigs, dies, and fixtures.

Manufacturers were given until August 15 to bring their inventories into line with the new ruling, which was issued as an amendment to priorities regulation 32.

Roofing Production

ASPHALT roofing and siding shipments totalled approximately 6½ million squares in June, the highest level in the industry's history, the CPA reports. Anticipated further improvement in production in the last half of this year may bring supply into approximate balance with new construction and maintenance requirements.

Materials Production

AS of July 31, Construction Division, Department of Commerce, reports that although production of steel—a key material in construction—is increasing, the industry will be unable to fill all third-quarter requirements. However, supplies for manufacturers of many critical items needed for the Veterans Housing Program during the third quarter are expected to be substantially insured by the Civilian Production Administration's emergency action to govern distribution of steel and pig iron production during the quarter.

A summary of the supply situation for materials and components in our field follows:

Steel: Production of steel ingots in June was 5,660,386 tons, representing 75 per cent of capacity. Output for the second quarter of 1946 was 15,593,096 tons, or about 69 per cent of capacity, and for the first half of the year, 27,364,714 tons, or 60 per cent of capacity. Shortages of coke, pig iron and scrap continue to retard operations.

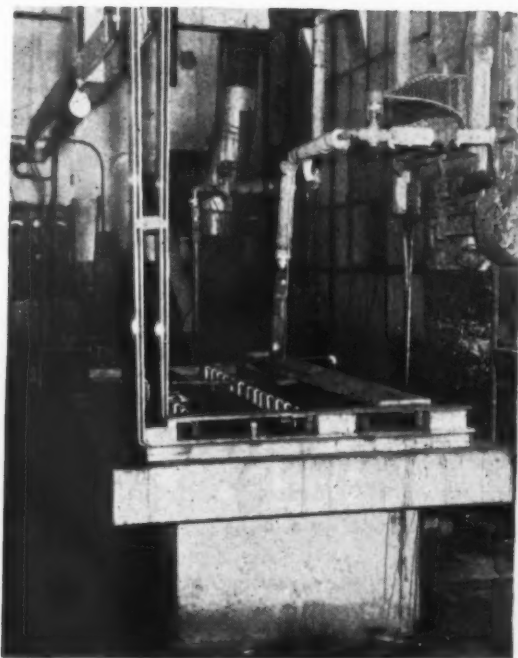
Scrap: Steel mills are reported to be only slightly better off regarding scrap supplies than they were in 1942, when lack of scrap resulted in shut-downs at some open-hearth furnaces. The need for scrap will increase when mills resume full operation. Anticipated supplies of battlefield scrap have not yet materialized, and scrap from automobile "graveyards" is not being moved to the mills owing to its value for replacement parts.

Asphalt Roofing, Siding and Felts: May shipments of asphalt roofing, siding, and felts totalled 6,295,000 squares, slightly less than total shipments in April, but 15 per cent more than those in May 1945 and 12 per cent more than average monthly shipments in 1945. Production appears to be sufficient to fill 1946 requirements for residential and other construction, as well as for maintenance and repair. A new felt mill and a new roofing plant recently went into operation, and currently the industry has no manpower problems. Although basic raw materials for dry felt continue in short supply, roofing rags are reported to be more plentiful.

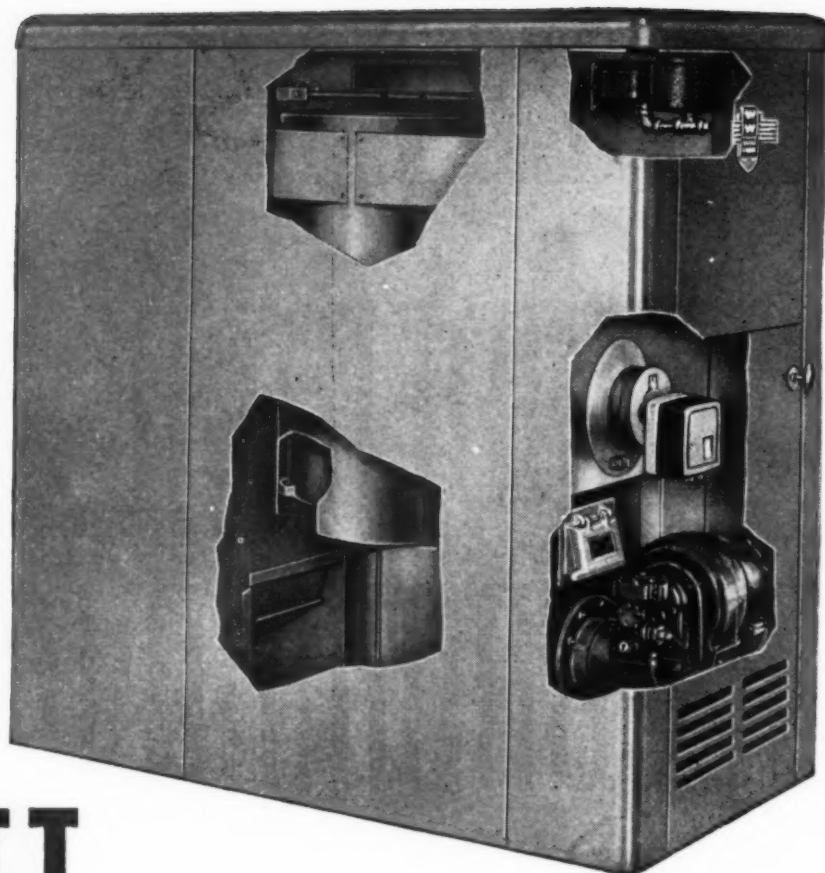
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AMERICAN ARTISAN

RESIDENTIAL AIR CONDITIONING



DEVOTED TO HOME AND SMALL COMMERCIAL AIR CONDITIONING



It's
What's Under
the Casing
that Counts



Waterbury

Oil Fired Air Conditioner

The Waterbury Oil Fired Air Conditioner is a modern, compact, attractive unit, economical to buy—economical to operate. It is enclosed in an eye-appealing casing that is a compliment to the most modern basement — but what is equally important to you — because of the efficiency and quality of what is UNDER that casing, you are saved annoying service calls.

Whether you are installing a simple gravity job or the most complete air conditioner, Waterbury's careful engineering and precision manufacturing insure a satisfied user—and freedom from service calls for you.

Furnaces for every size home and every type fuel—from gravity models to complete air conditioners.

Waterbury means long life, economy of operation and service-free installations.

THE WATERMAN-WATERBURY COMPANY

1122 Jackson St. N. E., Minneapolis, Minn.



1



—For complete combustion, each volume of fuel requires from 11 volumes of air for gas to 13,000 volumes of air for coal or oil plus excess air. Unless these volumes of air are provided, combustion is incomplete and fuel costs are excessive.

3



—The volume and weight of air for combustion or gas of combustion must be continuously removed from the furnace if combustion is to continue. To get this flow there must be "draft" through the furnace. To get "draft" the products of combustion must be lighter than and separated from the outside air—hence the need for a chimney.

2



—In burning any fuel, the fuel and air must be intimately mixed so that the combustible will contact oxygen. This is easy to obtain in burning gas; is readily supplied by the fan in an oil burner or in a stoker; but lump coal burned on a grate must have air passages and air movement through the fuel bed. About 165 cu. ft. of air is needed to burn one pound of coal so air must get into the basement.

4



—Since chimneys provide and control draft; chimneys must be built right—high enough, smooth enough, large enough, tight enough, insulated enough. Given a good chimney, there should be more than enough draft—so some form of draft control is necessary and the control should be adjusted for the fuel, the furnace and the chimney.

CONSTRUCTION requirements for chimneys as set out in the Standard Ordinance of the National Board of Fire Underwriters include the following as essentials.

"Walls of brick chimneys shall be not less than $3\frac{3}{4}$ " thick (one standard brick) and shall be lined with fire-clay flue lining, adapted to withstand high temperatures and the action of flue gases. Flue lining may be omitted in brick chimney provided the walls are not less than 8" thick and that the inner course shall be a refractory clay brick. All brickwork shall be laid in spread mortar, with all joints push filled. No plaster lining shall be permitted.

"Chimneys shall extend at least three feet above flat roofs and two feet above the ridges of peak roofs when such flat roofs or peaks are within 30 ft. of the chimney. The chimney shall be high enough so that the wind from any direction shall not strike the top of the chimney from an angle above the horizontal.

"There shall be but one connection to the flue to which the furnace smokepipe is attached. The furnace smoke-pipe shall be thoroughly grouted into the chimney and shall not project beyond the surface of the flue lining.

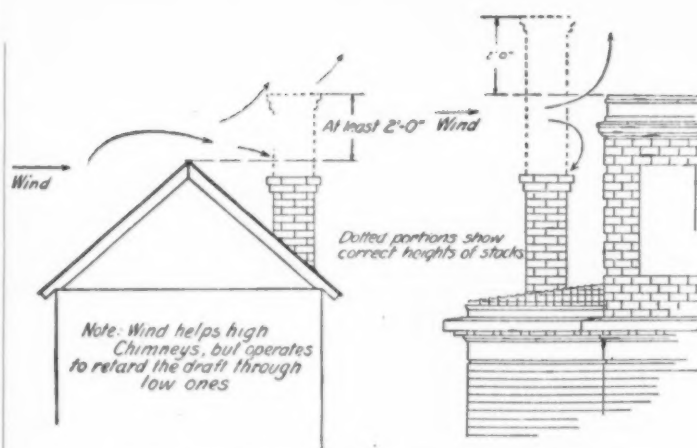
"The size or area of flue lining or of brick flue for warm air furnaces depends on height of chimney and capacity of heating system. For chimneys not less than 35 ft. in height above the grate line, the net internal dimensions of lining should be at least 7" x $11\frac{1}{2}$ " for a total leader pipe area up to 790 square inches. If the chimney is not lined the internal dimensions should be at least 8" x 12".

"Chimneys under 35 ft. in height are unsatisfactory in operation and should be avoided."

It is not always practicable to have a chimney as high as 35 ft., the desirable minimum set up in the code. In such cases it may be necessary to reduce draft losses of each part of the system to a minimum, or to provide mechanical means for increasing the draft.

The specifications as set out in the code are all based on practical as well as theoretical considerations.

Thickness of walls specified are the minimum for safety from a fire hazard standpoint. Chimneys in frame structures should be supported on an independent foundation and adequate clearances should be provided in framing around the chimney. If this is not done cracks may be opened which allow infiltration of air into the chimney or escape of sparks which may start fires.



Above we show the effect of insufficient height on a chimney. Dotted lines give correct distance above roof.

In brick structures, chimneys may be a part of the building walls provided the walls are securely bonded to the walls of the building and the flue is lined as for an independent chimney. The walls of chimneys built into the outside walls of buildings should be of ample thickness to avoid excessive loss of heat by radiation.

In addition to the elimination of the fire hazard the thickness of the wall influences the available draft. If the chimney is not of proper thickness or well insulated, the gases cool by radiation and the average temperature will be less than the temperature of the gas entering the chimney. When firing is intermittent

SOME COMMON CHIMNEY TROUBLES WHICH CAUSE INSUFFICIENT DRAFT, AS DETERMINED THROUGH USE OF A DRAFT GAGE

HOW TO DETECT AND REMEDY THEM

Trouble	Disclosed By	Remedy
Top of chimney lower than surrounding objects.	Observation	Extend chimney above all objects within 30 feet.
Chimney cap or ventilator.	Observation	Remove
Coping restricts opening.	Measurement	Make opening as large as inside of chimney.
Place of broken tile wedged in chimney.	By lowering a light or a weight down chimney.	Break tile with a rod or weight on a string or wire.
Joist protruding into chimney.	By lowering a light or a weight down chimney.	Change support for joist so that chimney will be clear.
Leakage between loose jointed tiles.	Smoke Test (Start smoking fire with top of chimney closed. Look for leakage from chimney.)	Rebuild chimney with a course of brick between flue tiles.
Debris accumulated in offset.	By lowering a light or a weight down chimney.	Break out with rod or weight. May be necessary to open chimney.
Heater or ventilator connection.	Observation	Remove
Offset.	By lowering a light or a weight down chimney.	Change to straight or to long offset.
Loosely fitted smoke pipe.	Smoke Test	Close leaks with cement.
Smoke pipe extends into chimney.	By lowering a light or a weight down chimney.	Make end flush with inside of chimney.
Loosely fitted cleantout door.	Smoke Test	Close leaks with cement.
Opening between flues.	Smoke Test	Close openings permanently.
Chimney too small.	Measurement	Rebuild
Chimney too large.	Measurement	Rebuild
Chimney too short.	Measurement	Extend

an improperly insulated chimney will cool off rapidly and the draft will be poor when firing is resumed after a standby period. This is the time when the most draft should be available.

Height of the chimney above the roof is necessary to avoid the effects of eddy currents which may result in a back draft.

Acid resistant glazed flue lining has two particular advantages: 1. It provides a relatively smooth surface with a minimum of frictional resistance; 2. Prevents or reduces the action of the gas and moisture on the chimney. All fuels contain some hydrogen which, on burning, forms water. If the gases are cooled below the dew point, water condenses and when sulphur is present, a solution of sulphur trioxide is formed which attacks the lime in the mortar. Where the hydrogen content of the fuel is high, or in the case of high moisture solid fuels, water condensed from the gases may seep through the mortar joints and attack the plaster causing unsightly stains and offensive odors.

The dew point temperature of the gas, or the temperature at which water condenses out, is approximately 133° for natural gas, 114° for oil and 112° for an average Illinois coal. The velocity of the flow of the gas in contact with the chimney lining is relatively low due to friction and condensation on the lining may take place when the average temperature of the gas is considerably above the dew point temperature.

A reasonable excess cross sectional area is provided to allow for a reduction in effective area due to an accumulation of soot and fly ash on the lining. Excessive cross sectional area in a poorly insulated chimney may result in a reduction in available draft.

Draft Control

Provision for draft must be made on the basis of the highest required combustion rates, sometimes under unfavorable draft conditions. An exception is in plants operating on heating loads due to weather conditions. Colder weather, or higher wind velocity, which require higher burning rates, result in higher available draft. However, practically all plants operate at times on lighter or varying loads for which draft must be adjusted proportionately.

If furnace construction was air tight, with a completely controllable air supply, control of the draft at the furnace outlet would not be required. However, such a condition is seldom found and control of the draft on the outlet side of the furnace is necessary to prevent excessive leakage of air into the furnace. In its simplest form this may be a shutoff damper or a cold air check, or both.

In practice, the means of controlling draft vary widely. As one extreme it is not uncommon to find plants in which no shutoff damper was installed, or if installed, has rusted out and been discarded, or in some cases has been blocked open and never used. Cold air checks may or may not have been provided, and if installed may not have been used. Where such conditions are found, one can expect to find also that the heating surfaces of the furnace are not kept clean and ash and clinker is allowed to accumulate on the grates. This combination of conditions obviously results in unsatisfactory heating and unnecessary waste of fuel.

If a plant is equipped with a damper in the ashpit to permit entry of air, and a shutoff damper and cold air check to control the flow of gas from the furnace, it is possible to operate the heating plant with reasonable satisfaction and efficiency by intelligent firing and

careful attention to adjustments of the dampers. Greater refinement in damper control has for its object more uniform heating at less expenditure of fuel and labor. Many control devices have been developed to replace human effort with mechanical energy.

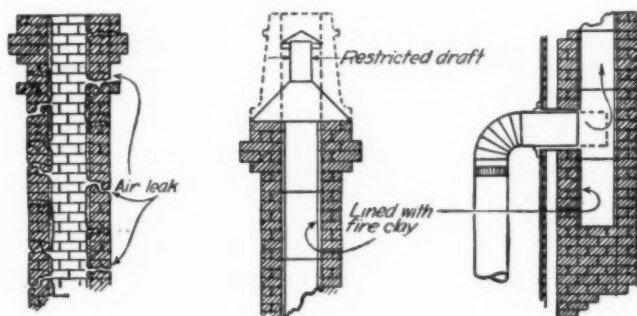
An ideal installation would be a combination of forced and induced draft in which the air supplied to the burner or fuel bed is controlled in relation to the heat requirements and stack or induced draft is controlled to maintain a uniformly low draft intensity in the furnace.

Types of Controls

Two general types of automatic damper control are in use, namely: 1. Those operating on the "on and off" principle in which the draft is either at a maximum or a minimum and 2. Those in which the damper adjustments follow the load requirements (floating control).

An application of the "on and off" principle is the type in which the inlet and outlet dampers are operated by a motor controlled by a thermostat, pressuretrol or aquastat. The dampers are either fully opened or nearly closed. In stoker fired plants, or gas or oil burners the movement of the dampers is synchronized with the operation of the burner.

Barometric controls and some types of power operated controls are examples of the floating type of control.

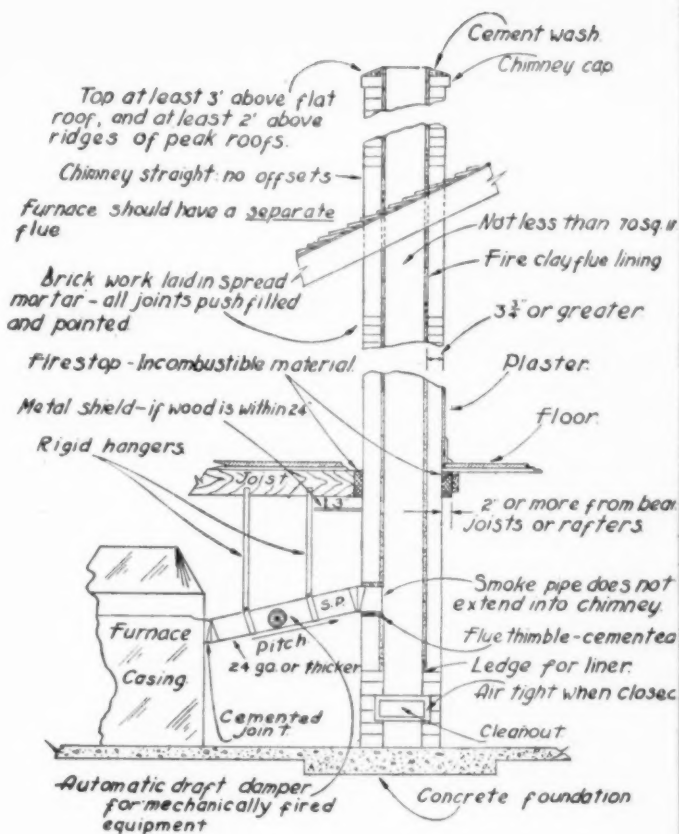


In small hand fired plants and in small stoker fired plants, in which the stoker is operated on the "on and off" principle, the barometric type of draft control is relatively effective and is the least expensive type of control.

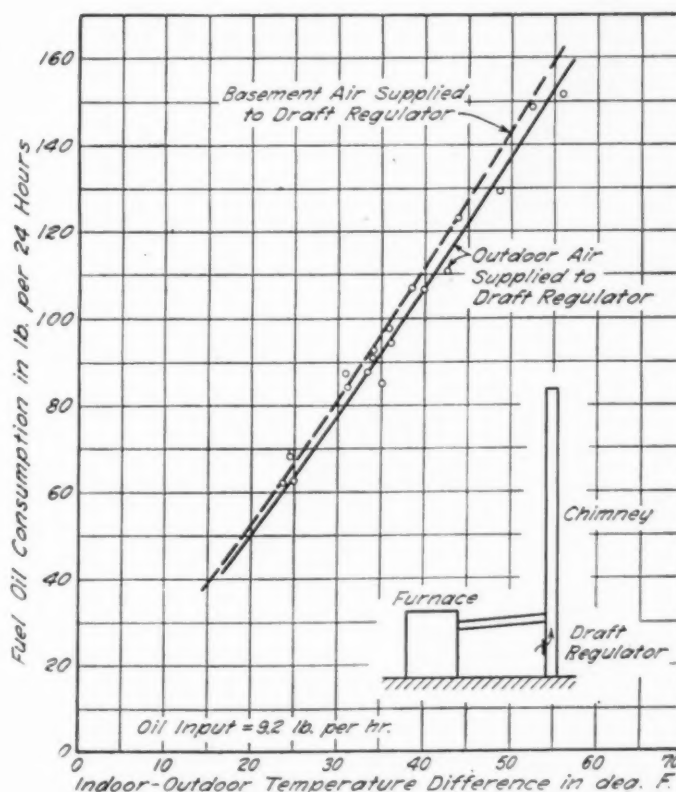
As stated earlier, provision for sufficient draft under the heaviest load conditions is required. The purpose of any stack damper control is to reduce the available draft as the load on the plant is reduced. As gas flow increases with increased burning rate the power required to cause flow of the gas and to overcome frictional resistance increases and less draft, as shown by draft gage readings at the furnace outlet, is available.

The open type barometric control acts as an automatic cold air check. It consists essentially of a butterfly damper located in a section of pipe connected to the smoke pipe or breeching, through which air enters the gas stream. The damper is hinged on frictionless bearings and is balanced by weights, one of which is adjustable in such a way that as available draft increases with decreased burning rate and gas flow, the damper opens allowing air at room temperature to enter the stack. It acts, therefore, by supplying air to maintain the full flow in the

(Continued on Page 122)



Above: Sectional view of correct chimney construction. Left: Faulty chimney installations which restrict draft. Below: Graph showing performance of draft regulator.



Oil Burner Course Available Again

By R. C. Nason

THERE are now about 300 adults and juniors taking practical and study work in vocational and technical high schools in Essex County, N.J., headquartered in Newark, on the subjects of design and service for air conditioning, refrigeration, oil burners and oil-fired heating plants. After a two-year lull in activities, last fall all the best features of the old program, plus vastly enlarged newer features, were again put into active operation. The buildings used are one each in

ESSEX COUNTY VOCATIONAL AND TECHNICAL HIGH SCHOOL

294 Norfolk Street
Newark 3, New Jersey

Outline of Course in Oil Burner and Refrigeration Service Vocational High School Course

10th Year — First and Second Terms

	Periods Per Week
Electrical Shop	20
Applied Science	6
Applied Mathematics (mensuration, tables, formulas, measuring instruments)	2
Applied Drafting	2
English A and B	4
General Social Studies	3
Health Education	3

11th Year — First and Second Terms

Basic Shop Practices in Heating and Ventilating (1st Term)	10
Oil Burner Installation (1st Term)	10
Elementary Oil Burner Service (2nd Term)	20
Applied Mathematics (mensuration, tables, formulas, testing devices)	2
Applied Physics and Chemistry	4
Applied Drafting	2
English A and B	4
United States History	3
Health Education	3
Study	2

12th Year — First and Second Terms

Refrigeration Shop and Laboratory	8
Advanced Oil Burner Service	8
Elementary Service of Air Conditioning Units	4
Principles of Heating and Refrigeration (1st Term) ..	4
Principles of Air Conditioning (2nd Term)	4
Elementary Electronics (1st Term)	4
Applied Drafting (2nd Term)	4
English A and B	4
United States History	3
Health Education	3
Study	2

All periods are 45 minutes—Each term is 20 weeks

Bloomfield, and Irvington, plus two in Newark. There are both day and evening classes throughout the entire year.

Considering, first, courses for juniors, it might be explained that students here are under 21 years of age

and enrolled in the Technical and Vocational High Schools. The curriculum for air conditioning, a technical study course, embraces oil burner heating and refrigeration as well. This is a three-year course for which graduates receive a diploma and is aimed to fit young men for design, engineering and checkup of oil heating, air conditioning and refrigeration.

For under-21 students Essex County also conducts another course of the same duration to train young men who seek only practical phases of these subjects and intend to perform the practical service work upon graduation. This course is known as a vocational course and is housed in the Vocational High School in Newark. Both the State of New Jersey and the Federal Government furnish financial aid and advisory help, thus requiring high standards in staff and scholarship.

High school graduates who wish to take the former two courses may do so and, if qualified, may be able to complete the work in a single year under an "accelerated" program. Graduates then are qualified for employment, placement being handled by the County Department of Guidance and Placement. Similar employment of all kinds, when applicants are more than 21 years old, is handled by the U.S. Employment Service. But an important point about the above-referred-to "accelerated," or short, course is that one may secure a job and continue his schooling evenings to fit himself for higher grades of work in oil heating, air conditioning and refrigeration lines.

To round out the instructional work the Essex County Board of Education, of which George W. Morgenroth, is Vocational Supervisor and Acting Principal of the Adult Technical School, also offers evening courses for adults in the practical phases of the discussed subjects. These classes are open to the public and are intended as "extension" work for artisans, mechanics and installers who, working at their jobs in the daytime, have to attend school in the evening for advancement. Subjects covered here are oil heating, oil burner care and installation, service on same in all practical phases, air conditioning and refrigeration as well, for those who prefer the latter two subjects.

This course is officially known as Oil Burner and Refrigeration Service and occupies 3,600 hours of laboratory and instruction in class rooms. Most of the work here, however, is practical training. Graduates receive certificates. Normally this is a 3-year course occupying 10 months per year.

One gets a good idea of the completeness of instruction here when it is observed that the shops and laboratories of the school have 10 completely equipped operating boilers and burners, plus sundry other conversion burners, two complete oil-fired winter air conditioning units, plus modern testing devices and control instruments. Including the other air conditioning and refrigeration apparatus available here the value of the total equipment is placed at \$75,000.00. Most of the equipment, it might be added, is loaned or furnished free by manufacturers and their distributors who are on the Advisory Council.

Then this county also offers to ex-G.I.'s, an official

course of practical nature, in the main, both daytime and evenings, on oil burner and refrigeration service. This, Course No. 4, is normally a 1,200-hr. training requiring 10 months at the rate of 30 hr. per week. An "accelerated" version of this training permits G.I.'s to graduate in 5 months whereupon, the G.I. is virtually guaranteed employment, almost before graduation, in that there is a shortage of mechanics in this area at this date.

Most Practical Course

Supervisor Morgenroth, asked which course in his opinion represented the best chance for success of the five courses outlined, stated that he felt that the air conditioning course was superior in that students who take up air conditioning also receive instruction and practical work in oil burners and oil heating plus refrigeration. Thus, it is noted that the air conditioning course embraces the best features of the other two branch subjects.

The speaker added that he felt the best action for men seeking training was to qualify for employment then advance in evening classes to higher pay through increased knowledge and skill. From the foregoing one observes that Essex County has carried forward the automatic heating, air conditioning and refrigeration educational program in a comprehensive way so that one may select his schooling time as well as his subject.

An outline of the courses in Oil Burner and Refrigeration Service and in Air Conditioning here offered may be secured from the following programs tendered by the County Vocational and Technical High School discussed.

Fees Are Moderate

In taking up these classes of training residents of Essex County have to pay only for uniforms and personal tools, plus, in some cases, materials used in excess of the allotment. Outsiders who wish to enroll may do so by paying \$15.00 per month in some cases or a per-term fee of small amount in other instances. In view of the advantages to be gained the sums asked are regarded as of minor importance.

There has been listed a brief summary of the subjects covered. As already indicated most of the instruction for installers and service men is of practical nature obtained in the workshop and laboratory. The instructors, of whom there are two full-time, six part-time and the Supervisor or acting principal, supplement laboratory work with individually prepared loose-leaf lecture material (not available at this time) and by asking students to read at home or elsewhere several books such as:

Oil Burner Service, by K. Steiner (pub. by McGraw-Hill Co.)

Oil Burner Manual, by Steiner and Fred Ravensbeck
ASHVE Guide

Oil Burners, by Ross

Another desirable feature of the matter of training of oil burner men by the Essex County Board of Education is the hearty co-operation, that includes supervisory, advisory and actual field help almost daily, of executives of companies actually engaged in the business. One such group is known as the "Service Council of the Northern New Jersey Advisory Committee." This group is headed by Harold Wallworth, Wallworth Bros., Newark, N.J., president; John Baumgarten, Public Service Corp., Newark, secretary; Dominick

Tobano, of T & T Refrigeration Service, co-ordinator.

The Advisory Committee, which is the chief guiding group, is active and includes a sizable roster that includes: C. Jensen, Minneapolis-Honeywell Regulator Co.; W. K. Stauffer, Mercoid Corp.; N. Gibson, Home Fuel Oil & Heating Co.; Fred Heisinger, of Automatic Controls, Inc.; Lionel Jacobs, Electrol Inc.; L. C. Smyth, president of N.O.B.D.A. and some dozen or more others prominent locally in the oil heating and air conditioning industry.

Interest in the work as well as keeping employment opportunities for graduates at a maximum, is enhanced, stated Mr. Morgenroth, by maintenance of constant mailing and personal contact with Advisory Council members and others prominent in the oil heat-

AIR CONDITIONING

Diploma Course First Term

	Periods Per Week
Basic Shop Practices in Heating and Ventilating	10
Heating Laboratory	10
Electrical Laboratory and Theory	6
Applied Drafting	2
Technical Mathematics 11	5
Applied Physics (heat and sound)	2
English 11A	2
Human Relations 1	2
Library and Study	1

Second Term

Refrigeration Laboratory	8
Air Conditioning Laboratory	12
Principles of Heating and Refrigeration	5
Principles of Air Conditioning	5
Air Conditioning Calculations	6
Applied Drafting (building construction)	4

OIL BURNER SERVICE

Certificate Course

Oil Burner Shop and Laboratory	28
Applied Science	2
Applied Mathematics (tables, formulas, measuring instruments)	2
Applied Drafting (blueprint reading and shop sketching)	2
English or Applied Science or Applied Mathematics or Applied Drafting	2
Human Relations 1	2
Physical Education or Library or Shop	2

Periods 45 minutes—Each term is 20 weeks.

ing industry, by sending out bulletins and other interesting data as it comes along.

Instructors are relatively well paid. Altogether there are now about 20 day and evening teachers, all practical men. Some are on a full-time and others on a part-time basis. Starting pay is \$2,600 per year with opportunity to reach \$5,000 per year after not too many years by teaching regularly and as substitutes for uncovered supplementary classes.

Possibly because established instructor standards are high, requiring some 8 years practical experience, it has not been too easy to fill the instructional staff at all times. To qualify one must take written and interview examinations plus the practical experience angle already mentioned. It is interesting to note here that

(Continued on Page 124)



CATALYTIC FUEL OILS

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By **WILLIAM A. SULLIVAN***

Shell Oil Company, Incorporated

This paper was originally presented at the Oil Heat Institute's 1946 Convention and the full title is: "Characteristic Properties of Catalytic Fuel Oils and Their Effect on Burner Performance."

CATALYTICALLY cracked distillates are here to stay and will undoubtedly assume increasing importance in the domestic heating oil picture as time goes on. With this fact staring us in the face, coupled with the fact that millions of domestic oil burners now in use were designed to use prewar fuels, the oil burner manufacturer, dealer, and oil burner owner have a right to be concerned as to the ability of this new type of fuel oil to give performance comparable to that provided by its predecessor. And this has also been of major concern to the oil refiners, who will have the responsibility of producing this new type of fuel oil.

The time has long since passed when fuel oil can be considered a byproduct in the production of gasoline and kerosene, and as such, sold to the public with no regard given to its quality other than to see that it merely falls within some general classification, such as No. 1 or No. 2. The production of fuel oil has taken on a status of major proportions in the modern refinery set-up, and the oil companies would be the last ones to make any unnecessary move which would tend to jeopardize this very valuable portion of their total business.

Long before the development of catalytic cracking had reached the stage of commercial production, an intensive study was being made to determine how the various types of oil burners now in existence, as well as those of the future, were going to react to a diet composed predominately of catalytic distillates. This work was begun on pilot plant samples. It was continued on distillates produced commercially from various types of charging stocks and under different operating conditions, and finally the laboratory findings were backed up by an entire year of field experience on commercial blends representing millions of barrels of fuel oil distributed over all parts of the country. It was only after this latter phase of investigation was completed that a prediction was made as to what effect the current trend toward the increasing use of catalytic distillates is likely to have on the quality of the home heating oils of the future.

The results of this work have led to a very optimistic view in this regard. In contrast to, and in spite of, the widespread adverse publicity which has attended the introduction of catalytic distillates as burner fuels, manufacturers are convinced that their continued use will in no way retard but instead may actually accelerate the remarkable pace set by the industry, so far, in establishing oil in the public mind as a most economical and generally satisfactory form

**Senior Fuel Oil Applications and Development Engineer, Manufacturing Department.*

of clean, trouble-free, automatic heat. This is not mere wishful thinking. Tests have shown that *properly refined* catalytic distillates as a class are actually superior in many respects to comparable thermally cracked and straight run distillates of which prewar fuel oils were composed.

Stability and Cleanliness

In the first place, catalytic distillates are inherently cleaner and more stable with respect to deterioration in storage and formation of sediment than the average thermally cracked and many untreated, straight run distillates. This is because catalytic cracking tends to produce a relatively high percentage of aromatic compounds which are chemically considered the most stable of any of the four hydrocarbon groups, whereas thermal cracking tends to favor the formation of olefinic (unsaturated) hydrocarbons which are known to be much more susceptible to oxidation and formation of acids, sludge, etc. It has also been found that the relatively small percentage of unstable constituents present in catalytic fuels respond quite readily to removal by acid treatment. Thus, it is quite possible that, cleaner fuels will result from the increased use of catalytic distillates. This should be a particularly welcome improvement at this time, in view of the increasing percentage of oil burners being installed in small homes. These burners will have to operate at relatively low firing rates and thus will, no doubt, be more susceptible to clogging of the atomizing nozzle or oil metering valve than the larger sizes.

Non-corrosive Nature

It has also been of interest to find, by both laboratory tests and actual field performance, that the catalytic fuels which we have examined thus far have shown no tendency toward corrosion of metallic oil burner parts, such as copper lines, pump seals, pressure regulating valves, etc. Their superiority in this respect to many of our prewar and wartime fuels is apparently due to the fact that corrosive compounds which may be present in feed stock from which the catalytic distillates are produced, are either removed during the cracking or subsequent treating processes, or else they are chemically converted to noncorrosive forms.

Distillation Characteristics

In considering the distillation characteristics of catalytic fuel oils, we find that they are apt to contain a lower percentage of light volatile fractions than prewar fuels. This is because catalytically cracked fractions with boiling points as high as 425°F., or

more, have high anti-knock value and thus make excellent motor fuel, whereas comparable fractions from straight run or thermally cracked distillates are of little value as motor fuel and, therefore, are usually left in the kerosene or light fuel oil cuts. However, the lack of front end volatility in catalytic distillates is offset to some extent by the characteristically lower end points and 90% distillation points, which result from the relatively light charging stocks generally used in catalytic cracking operations. With a reduction in end point one can reasonably expect a lower carbon residue content, all other conditions being equal. Thus the over-all effect of the change in distillation characteristics will be negligible from the standpoint of burner performance, except in the case of a relatively small group of critical vaporizing burners which require a very volatile fuel for quick lighting from a cold start.

High Heat Value and Low Viscosity

The impression has become rather widespread that catalytic fuels as a whole are much heavier than prewar fuels. This point requires some clarification. If the gravity of the fuel is referred to, then it would be correct to say that, in general, catalytic distillates are actually heavier, in the sense that they weigh more per gallon, than straight run distillates of comparable boiling range. This is a distinct advantage because the heavier the gravity of the fuel, the higher it is in heat value. However, in viscosity, which is the most reliable measure of the ease with which the oil can be atomized, the difference between catalytic and straight run distillates can for all practical purposes be considered negligible. If any difference does exist the catalytic distillates tend to run somewhat lighter in viscosity than straight run distillates in the same boiling range.

Low Pour Point

In pour point, due to their higher aromatic content and lower paraffinicity, catalytic distillates have been found to run lower than their predecessors, which is still another point in their favor, since this should make for far easier handling in extremely cold weather.

And as one compares the two types of fuel point by point, it becomes increasingly clear that the catalytic distillates are inferior to prewar fuels in only one important respect—under adverse burning conditions the catalytic fuels show a more pronounced tendency to smoke and carbonize than straight run distillates in the same boiling range. The explanation for this lies in the difference in hydrocarbon composition between the two types of fuels.

Burning Characteristics

Catalytic fuels contain a relatively high proportion of aromatic compounds which, due to their peculiar chemical structure, are quite stable and thus tend to resist oxidation. The mechanism by which aromatics burn involves splitting apart carbon and hydrogen and burning each element separately. Unless each carbon particle, thus liberated, is surrounded by air while still at high temperature, it gets away without being burned and shows up in the form of smoke, soot, or carbon. On the other hand, in the burning of straight run fuels, which are predominantly naphthenic or paraffinic in nature, combustion tends to proceed in a somewhat more orderly fashion, taking place progressively as the temperature increases, with

the formation of intermediate oxidation products, which in turn are finally burned completely. Catalytic fuels require more thorough mixing with air before combustion begins, or in the early stages of combustion, in order to completely ignite all of the free carbon that is split off during the combustion process. And if the oil burner is designed to provide the proper burning conditions, then catalytic fuels exhibit no greater tendency to smoke than straight run fuels.

With an additional year of laboratory investigation and actual field experience behind these fuels nothing should stand in the way of the oil heating industry taking full advantage of the superior characteristics that catalytic fuels have to offer, once it is thoroughly understood just what is required in the way of future burner designs as well as adaptations in existing burner installations.

With a knowledge of the inherent burning characteristics of highly aromatic fuels, it should not be too difficult to design new burners so as to provide the favorable burning conditions required. However, the adaption of existing burner installations which for the most part were designed for fuels of prewar quality presents a somewhat different problem. But in either case better mixing of the air and oil appears to be the answer, and the extent to which this can be satisfactorily achieved in the field depends largely on the type of burner dealt with.

Pot-Type Burners

The successful combustion of catalytic distillates in pot-type vaporizing burners requires that ample opportunity be provided for vaporization and thorough mixing of the oil vapors with air before the fuel is exposed to the intense heat of the flames; otherwise cracking of the fuel both in the liquid and vapor gives rise to excessive amounts of smoke and carbon deposits. You are obviously limited as to the changes that can be made in existing pot-type burner installations, but tests conducted on a number of different burners of various makes indicated that the performance of burners of this type can be greatly improved by maintaining a sufficiently high stack draft at all times and by operating at burning rates from 20 to 25% lower than the manufacturer's rating on prewar fuels. Beyond this the success with which catalytic fuels can be handled by pot-type burners seems to be largely a matter of burner design, the most important variables being (1) the diameter and shape of the burner pot, (2) the depth of the pot, and (3) the size, number, and spacing of the primary and secondary air ports.

Vertical Rotaries

Tests conducted on vertical rotary wall-flame burners demonstrated the important role that timing plays in the mixing of the air and oil when burning catalytic fuels. With the standard low type grills clipped onto the edge of the flame rim, 50% of a given catalytically cracked fuel blended with straight run distillate was found to be about the maximum concentration that could be tolerated under the test conditions without producing excessive smoke and forming a heavy carbon build-up on the heating surfaces at the base of the boiler. However, by simply raising the grills about two inches above their normal setting, thereby affording a slightly longer time for mixing of the air and oil before the combustion process began, it was possible to burn 100% of the

(Continued on Page 124)



The "How, What and Why" of the New Winter Air Conditioning Manual

BY
S. KONZO*

HOW TO USE IT
WHAT RESEARCH BACKS IT UP
WHY EVERYBODY SHOULD ADOPT IT

Sizing of Trunk Ducts

IN the previous article it was shown that the Manual allows considerable flexibility in the design of the plenum chambers and trunk ducts. It was also indicated that the Manual method of sizing the trunk duct is based on the use of a minimum amount of sheet metal and that any method which gives trunk duct sizes larger than those specified by the Manual can be used.

It's Easier Than It Looks

The procedure for determining trunk size is extremely simple, in spite of the fact that the written instructions given in Fig. A appear to be so complicated. Essentially, the method consists of the following steps:

1) Converting all branch ducts and trunk ducts to equivalent ducts having 8 in. depths. For example, if a warm air Combination No. 42 is specified, we know that the branch duct could be 10 in. x 3 $\frac{1}{4}$ in., 6 in. round, or 4 in. x 8 in. Whichever one of the three ducts that is actually used, for the purpose of sizing the trunk duct, we are interested only in the 4 in. x 8 in. dimension, and particularly in the 4 in. width.

2) We begin at the very end of the longest duct and call that the beginning of the trunk duct. This would be similar to going to the very beginning of the Missouri River up in the Rockies, and saying, "here is where we start."

3) We then increase the trunk width every time a new branch is added. Note that we do not add 2 and 2 to get 4. If, as shown in Fig. B, you add a 5 in. x 8 in. duct to another 5 in. x 8 in. duct, you get a trunk duct that is not 10 in. x 8 in., but only 8 in. x 8 in. In other words, the increase in trunk width was only 3 in. for a 5 in. x 8 in. branch.

In our river analogy, where the Ohio River joins the Missouri-Mississippi trunk we obtain a width that is smaller than the sum of the widths of the two adjoining streams.

Five and Five = Eight

The reason two 5 in. x 8 in. ducts can be handled by one 8 in. x 8 in. duct is that the larger 8 x 8 duct has

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a relatively smaller resistance per foot of duct than the 5 x 8 ducts for the same air velocity. Or to put it in another way, for the same pressure drop per foot of duct, a larger duct can handle air at a higher velocity than can a smaller duct.

4) A convenient table giving the required increase in width of trunk duct is shown in Fig. C. For example, if a 12 in. x 8 in. branch duct is added to a trunk duct, the width of the trunk is increased by 9 in.

Shallow Trunk Ducts

What About 6 In. Depths of Trunk Ducts? Suppose that in order to make a trunk duct pass through a shallow joist space, you are forced to cut the 8 in. depth to 6 in. Or suppose that the trunk duct has to pass between two posts that limit the width of the trunk duct.

The equivalent duct sizes are listed in Fig. D. For example, a 13 in. x 8 in. duct can be changed to:

- a 12 in. round pipe, or
- an 18 in. x 6 in. duct, or
- a 10 in. x 10 in. duct, or
- a 9 in. x 12 in. duct.

These are all interchangeable sizes that have about the same friction loss per foot of pipe.

The following notes are only for the advanced student and give some details as to how the Manual Method was derived.

The simple method of trunk duct design given in the Manual is frankly a compromise solution, which may give trunk sizes slightly larger or smaller than are required from strictly theoretical considerations of pressure loss.

For example, let us consider the case in which we have two ducts of the same equivalent length joining together to form a large trunk duct. By making an extensive series of calculations utilizing the friction chart for air flow in ducts, we can arrive at the results shown in Fig. E. For example, if a branch duct of 10 in. width (see column 1) is connected to a trunk duct of 24 in. width (see column 12), the required increase

Section G

PROCEDURE FOR DETERMINING TRUNK SIZES

(Applicable to both warm-air and return-air runs.)

After branch duct sizes have been determined, as shown in Sections E and F, the sizes of the trunk duct are determined as follows:

PROCEDURE	EXAMPLES AND ILLUSTRATIONS															
1. Consider that section of the trunk line, which is farthest from the furnace bonnet as the beginning of the trunk duct .	See example in Fig. 12. The duct labeled (7a) to the Recreation Room can be considered as the beginning of the trunk duct, and ducts (7b), (1), (2), and (6) can be considered as branches.															
2. Determine the equivalent rectangular duct size of this farthest run , and note its width. Note the equivalent width even if the actual duct is not rectangular, or is not 8 in. in depth.	See Table 6, Line 18. Each of the ducts leading to room No. (7) were composed of Combination No. 43 branches. As shown in Table 11, Column 4, the equivalent rectangular duct for Comb. No. 43 is 5 in. wide by 8 in. deep.															
3. Determine the increases to the width of the trunk duct required for each of the branch ducts. These are given in the last column of Tables 11, 12, and 13.	See Table 6, Line 18. The Combination Nos. for each branch were listed. The increases to the trunk duct are as follows: <table><tr><th>For Branch No.</th><th>Combination Number</th><th>Trunk Duct Addition</th></tr><tr><td>7b</td><td>43</td><td>3 in. to width</td></tr><tr><td>1</td><td>42</td><td>2 in. to width</td></tr><tr><td>2</td><td>42</td><td>2 in. to width</td></tr><tr><td>6</td><td>41</td><td>1 in. to width</td></tr></table>	For Branch No.	Combination Number	Trunk Duct Addition	7b	43	3 in. to width	1	42	2 in. to width	2	42	2 in. to width	6	41	1 in. to width
For Branch No.	Combination Number	Trunk Duct Addition														
7b	43	3 in. to width														
1	42	2 in. to width														
2	42	2 in. to width														
6	41	1 in. to width														
4. Where the first branch duct joins the trunk duct, add the: (a). equivalent width of trunk, and (b). the trunk duct increase of the branch duct. The sum is the required width of the trunk duct up to the next junction. The depth is considered as 8 in.	See example in Fig. 12. The width of trunk duct (7a) is 5 in. The trunk duct increase for branch duct (7b) is 3 in. 5 in. + 3 in. = 8 in. The size of the trunk duct, following this junction and up to the next junction joint, is 8 in. wide by 8 in. deep.															
5. For each of the succeeding junctions , closer to the furnace bonnet, add the: (a). width of the more remote trunk, and (b). the trunk duct increases required for each branch.	The remote trunk size, where branches (1) and (2) join the trunk, is 8 in. wide. The trunk duct increases for branches (1) and (2) are each 2 in. 8 in. + 2 in. + 2 in. = 12 in. The size of the trunk after this junction is 12 in. wide by 8 in. deep.															
6. The only difference between Comb. Nos. 41 and 42, (or between Comb. Nos. 51 and 52), is in the required increase to the width of the trunk duct. See Tables 11 and 12.	See Fig. 12. Branch duct (6) is a Comb. No. 41 branch, with a 1 in. trunk duct increase. If this branch had been Comb. 42, the sizes of all parts of the branch would have been the same, but the trunk duct increase would have been 2 in., instead of 1 in.															
7. Where two or more trunk lines join to form a main trunk, each of the smaller trunks should be independently sized up to the junction. The shorter of the two smaller trunks is treated as a branch duct, and the procedure is as before See Table 13 for complete list of trunk duct additions.	Suppose that a long trunk duct of 13 in. x 8 in. dimensions is joined by a shorter trunk duct that is 8 in. x 8 in. From Table 13, last column, the trunk duct addition for the 8 in. x 8 in. duct is 6 in. 13 in. + 6 in. = 19 in. The main trunk after the junction will be at least 19 in. wide. The depth will remain at 8 in.															
8. In case structural limitations make it necessary to re-design either the warm-air or return-air trunk lines, the original duct plan should be revised.	In making the revision of the original duct plan, the same procedure must be followed as that used in the original trial.															

Fig. A—Above is shown the procedure for determining Trunk sizes, as taken directly from the Manual. As is explained in the text of this article this illustration looks rather frightening at first glance but is really capable of being condensed into a series of fairly simple steps. Following the given outline and using the charts which accompany this discussion the task of sizing trunk ducts becomes comparatively easy.

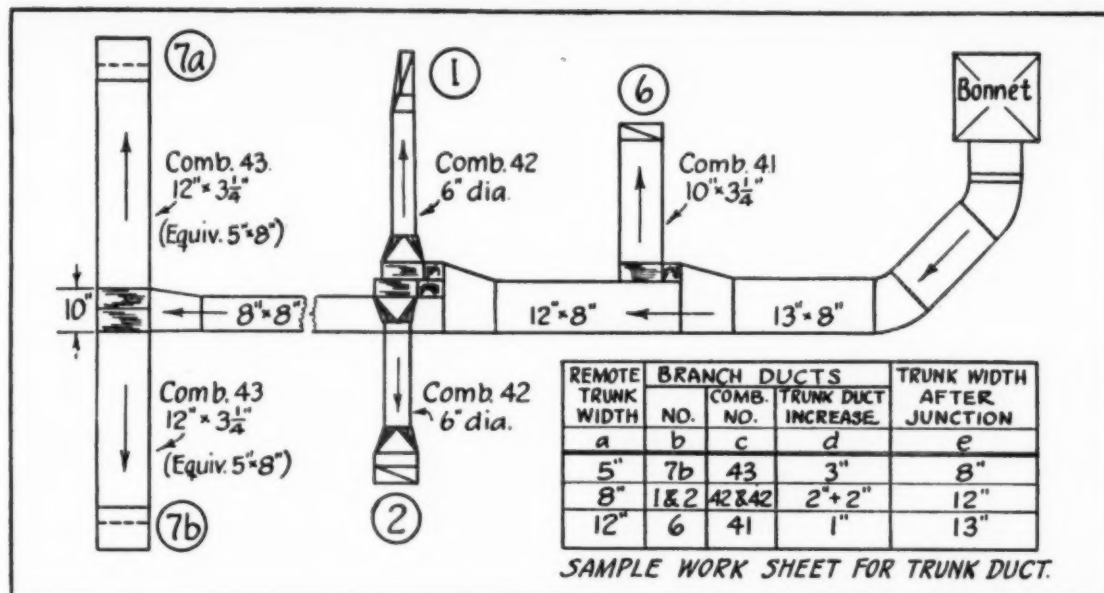


Fig. B—This is an example of the way the method of calculation of trunk sizes works out using some actual figures. It demonstrates the fact that 2 and 2 do not make four when sizing ducts. The explanation of this apparent mistruth is quite reasonable, as the text says.

in width of the trunk duct after the junction is 6.5 in. That is, the required trunk width is 24 plus 6.5 or 30.5 in. It may be noted by examining the values in the same horizontal line, that when the size of the main trunk is successively reduced, the required increase in trunk width changes from 6.5 in. to 8 in. The value specified in the Manual is 7 in., as shown in the last

column. This value is slightly undersized for the cases where the branch duct is larger in size than the trunk to which it connects. However, this case is infrequently encountered, and the small error introduced is of no practical significance.

Tables similar to Fig. E were set up by us in making these checks of the validity of the Manual method for

TABLE 13. INCREASE IN WIDTH OF TRUNK BY ADDITION OF BRANCH DUCTS			
IF THE FOLLOWING BRANCH SIZE IS ADDED TO A TRUNK DUCT	CORRESPONDING COMBINATION NUMBERS		THE INCREASE IN WIDTH OF TRUNK DUCT (HAVING 8 IN. DEPTH) IS:
	Warm Air	Return Air	
Width, in. x Depth, in.			in.
4 x 8	41	51	1
4 x 8	42	52	2
5 x 8	43	53	3
6 x 8	44	54	4
7 x 8	—	—	5
8 x 8	45	55	6
9 x 8	—	—	7
10 x 8	46	56	7
11 x 8	—	—	8
12 x 8	—	—	9
13 x 8	—	—	10
14 x 8	—	—	11
15 x 8	—	57	11
16 x 8	—	—	12
17 x 8	—	—	13
18 x 8	—	—	14
19 x 8	—	—	15
20 x 8	—	—	16
22 x 8	—	—	18
24 x 8	—	—	20

Fig. C.—This table is convenient in the process of sizing since it is pre-figured and eliminates some of the pencil work which would be necessary if the table were not in the Manual.

EQUIVALENT DUCT SIZES

If following Sizes are Specified	These Duct Sizes Can Be Used as Equivalents				
	Round Pipe Diameter	Rectangular Ducts—Inches			Stacks for 6 in. studs, 16 in. o. c.
		Depth 6"	Depth 10"	Depth 12"	
4 x 8	6 in.	5 x 6	3 1/4 x 10	3 1/4 x 12	
5 x 8	7 in.	7 x 6	4 x 10	3 1/4 x 12	
6 x 8	8 in.	8 x 6	5 x 10	4 x 12	
7 x 8	9 in.	10 x 6	6 x 10	5 x 12	5 1/4 x 12
8 x 8	9 in.	11 x 6	7 x 10	6 x 12	5 1/4 x 12
9 x 8	10 in.	12 x 6	7 x 10	6 x 12	5 1/4 x 14
10 x 8	10 in.	14 x 6	8 x 10	7 x 12	5 1/4 x 14
11 x 8	10 in.	15 x 6	9 x 10	7 x 12	
12 x 8	12 in.	17 x 6	10 x 10	8 x 12	
13 x 8	12 in.	18 x 6	10 x 10	9 x 12	
14 x 8	12 in.	20 x 6	11 x 10	9 x 12	
15 x 8	12 in.	22 x 6	12 x 10	10 x 12	
16 x 8	12 in.	23 x 6	13 x 10	11 x 12	
18 x 8	14 in.	26 x 6	14 x 10	12 x 12	
20 x 8	14 in.	29 x 6	16 x 10	13 x 12	
22 x 8	14 in.	32 x 6	17 x 10	14 x 12	
24 x 8	16 in.	35 x 6	19 x 10	15 x 12	
26 x 8	16 in.	38 x 6	20 x 10	17 x 12	
28 x 8	16 in.	41 x 6	21 x 10	18 x 12	
30 x 8	16 in.	44 x 6	23 x 10	19 x 12	
32 x 8	18 in.	47 x 6	24 x 10	20 x 12	
34 x 8	18 in.	50 x 6	26 x 10	21 x 12	
36 x 8	18 in.	53 x 6	27 x 10	22 x 12	
38 x 8	18 in.	56 x 6	29 x 10	23 x 12	
40 x 8	20 in.	59 x 6	30 x 10	24 x 12	
42 x 8	20 in.	62 x 6	32 x 10	26 x 12	

Fig. D.—This is a fairly complete table of equivalent sizes and should cover nearly any case which might arise. However, it is not always to be taken as the last word in accuracy, for the author says that some discrepancies may turn up.

a number of other cases in which the equivalent length of the branch duct was less than that of the main trunk. In extreme cases, in which the equivalent length of the branch duct is only 1/4 that of the main trunk, the Manual method gives trunk increases that may be 2 or 3 in. smaller than theoretically required. This discrepancy is of no great concern in the type of heating plants for which Manual is intended, since

the probability of having such cases is remote for relatively small systems.

Strict accuracy has been sacrificed for simplicity, but a check of all possible contingencies to be expected in relatively small duct systems indicates that the precision attained is well within the range of accuracy accompanying the remainder of the design procedure.

Fig. E **THEORETICAL INCREASE IN TRUNK WIDTHS**

For cases in which equivalent length of branch is equal to that of main trunk. Figures in table are similar to those shown in Column 4 of Fig. C and refer to 8 in. deep trunks.)

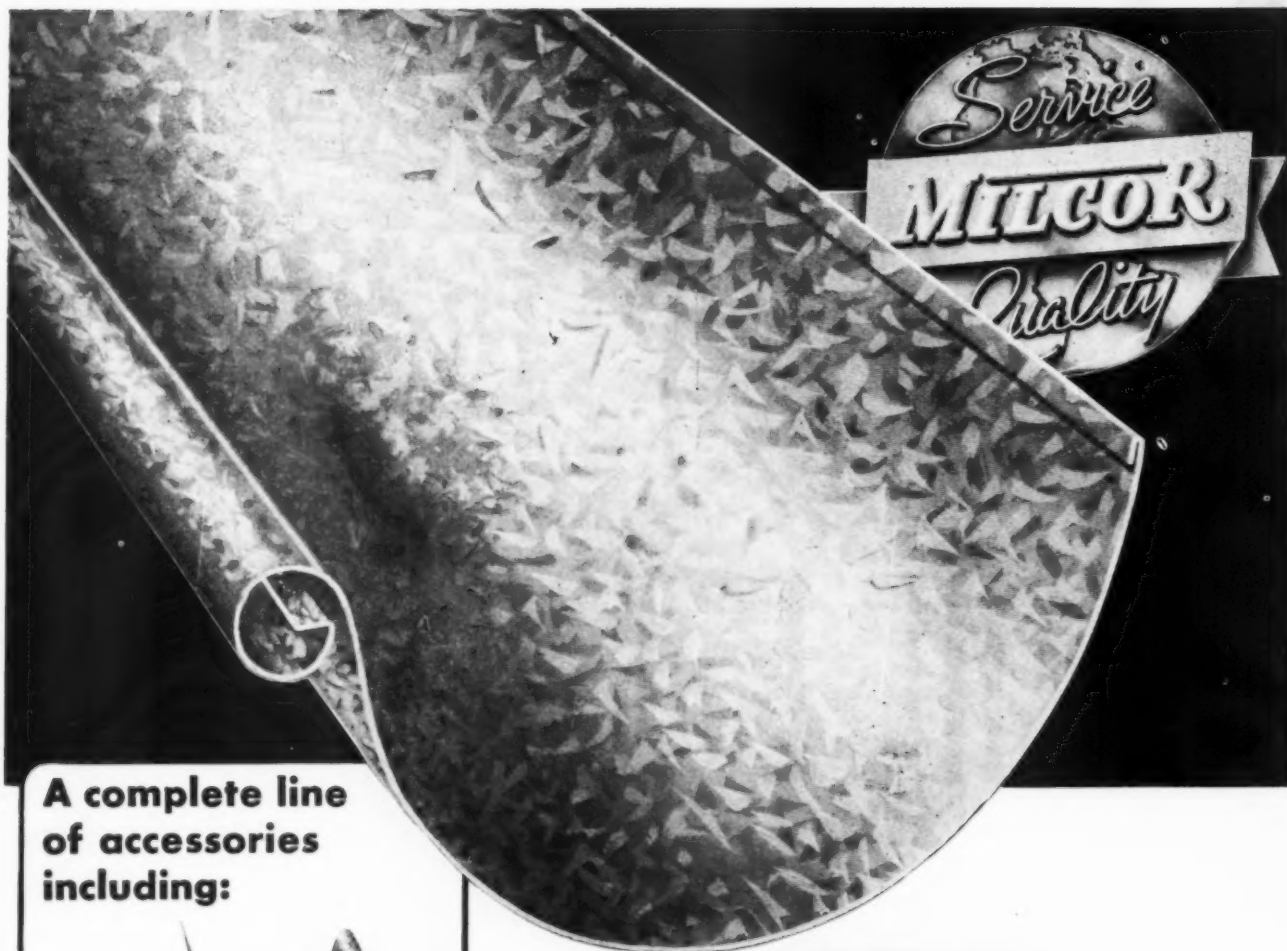
Width of Branch Duct	Width of Main Trunk before Junction with Branch										Value Shown in Fig. C.	
	4 in.	6 in.	8 in.	10 in.	12 in.	14 in.	16 in.	18 in.	20 in.	22 in.		24 in.
2 in.	1	1	1	1	1	1	1	1	1	1	1	1
4 in.	2.5	2	2	2	2	2	2	2	2	2	2	2
6 in.	4	4	4	4	4	4	4	4	4	3.5	3.5	4
8 in.	6	6	6	6	6	5	5	5	5	5	5	6
10 in.	8	8	8	7.5	7	7	7	7	7	6.5	6.5	7
12 in.	10	10	10	9	9	9	9	9	8	8	8	9
14 in.	12	12	11	11	11	10	10	10	10	10	10	11
16 in.	14	14	13	13	13	12	12	12	12	12	12	12
18 in.	16	16	15	15	15	14	14	14	14	14	14	14
20 in.	18	18	17	17	16	16	16	16	16	16	15	16

AMERICAN ARTISAN

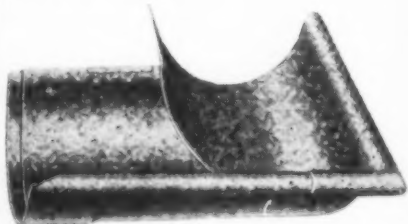
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G-29

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Surface Preparation of Aluminum Alloys

BY WILLIAM P. BROTHERTON

Ryan Aeronautical Company
San Diego, California

Part II — Chemical Cleaning

PRACTICALLY all of the chemical cleaning procedures for preparing aluminum alloys for spot-welding involve precleaning with a commercial cleaner or degreasing solution, a water rinse to remove the traces of cleaner and an oxide removal. Most of the oxide-removing solutions fall into four classes: 1—hot dilute acid, 2—cold concentrated acid, 3—cold dilute acid and 4—alkaline. Oakite No. 84a is a preparation of the first type. Kelite process K-1 belongs to the second and hydrofluoric acid (HF) solution is an example of the third. Turco Coldwell falls between the second and third classes and Oakite No. 30 is typical of the fourth class. The oxide removal is accomplished by an attack upon the metal wherein some of the aluminum is dissolved. Close control of the procedure must be maintained to prevent excessive corrosion.

There are a great many types of oxide-removing solutions. Some companies have developed their own combinations of acids and etchants which have proved to be beneficial in their particular circumstances. A few of the commonly used solutions are: a 2 to 4 percent solution of hydrochloric acid (HCL), hydrofluoric acid (HF), 5 percent sodium hydroxide solution (NaOH) at 150° F., gum, tragacanth and hydrochloric acid dissolved in water, hot nitric acid (HNO₃), plain sulfuric acid (H₂SO₄) plus a wetting

agent, and Oakite 84a solutions which are hot dilute acids. In addition, sodium bisulphate (NaHSO₄), potassium bisulphate (KHSO₄), ammonium bisulphate (NH₄HSO₄) and phosphoric acid (H₃PO₄) have all been successfully used to remove the oxides of aluminum. The acid fluorides such as sodium and ammonium bifluoride (NaHF₂ and NH₄HF₂) have been dissolved in an acid to liberate hydrofluoric acid in small amounts to remove the oxides. Here the amounts of fluoride salt are very critical resulting in extremely critical operating time and it is difficult to determine the amount of free hydrofluoric acid in the bath at all times.

Phosphoric acid attacks aluminum satisfactorily at room temperatures but it is critical for any changes in temperature and produces a somewhat milky surface.

Hydrofluoric acid, one of the earliest oxide removers, is extremely critical demanding control within a matter of seconds. With slight overtreatment, a milky film which is as harmful as the original oxide, is deposited on the surface. At very dilute concentrations, the operating time becomes less critical but the acid concentration must be rigidly maintained to obtain consistent surface resistance.

The surface treatment of Alclad 24ST in hot nitric acid produces a surface with a low contact resistance and good weldability for a short time but the surface

ERRATA: In Article One of this series, on Page 82, July AMERICAN ARTISAN, commercially pure aluminum was designated as "25" rather than "2S." On Page 84 of the same issue the word "bending" was used instead of "bonding."

is unstable. Of the listed oxide removers, plain sulphuric acid plus a wetting agent has the widest operating range.

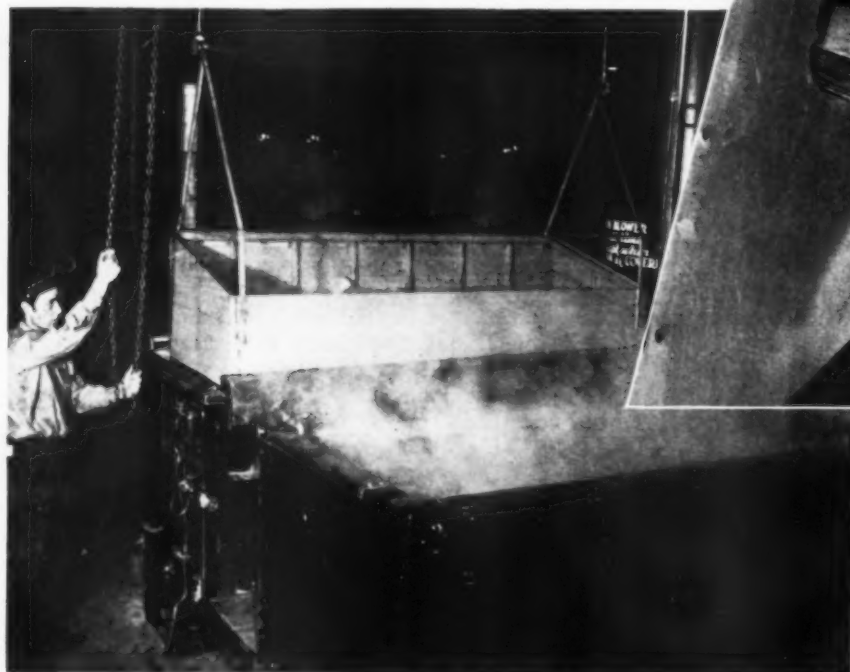
One of the added problems injected into the oxide removal picture comes from the erratic behavior of aluminum stock which has been heat treated in air. It responds with far less consistency to acid treatment than stock which has been heat treated in a molten nitrate salt bath. This weakness is inversely proportional to the thickness of the stock and is evidently due to the diffusion of copper from the base stock which affects the composition of both the oxide film and the cladding during the heat treatment. With .064" material there is no significant difference between air and nitrate heat treated stock. For greatest consistency, all material .040" and under should be nitrate heat treated.

Conditions for Welds

While satisfactory spotwelds can be made under carefully controlled conditions with the commonly used oxide removers, it is evident that they leave much to be desired when high production cleaning is contemplated. There is one solution which seems to be the ideal oxide remover. It is proving so superior to the others in general use that more and more com-

Surface treatment by a solution of hydrofluosilicic acid has consistently given satisfactory results and proved to be very economical and efficient. A standard procedure for cleaning Alclad 24s, Alclad 75c, Alclad A301, 2s, 3s, 52s, 53s and 61s, lightly soiled is:

1. Remove oil, identification marks and other foreign matter by immersing in a tank of standard alkaline cleaner for 5 minutes. This cleaner should be buffered to prevent the alkalinity exceeding pH 11.0. The solution is prepared by using between 4 and 6 ounces of cleaner per gallon of water. Operating temperature should be 180°F. There is an approximate 100 percent increase in efficiency for every 10 degree



Two views of aluminum alloy sheets being subjected to the alkali cleaning process to remove grease and foreign matter.

panies, including the Ryan Aeronautical Company, are turning to its use. That is hydrofluosilicic acid (H_2SiF_6). This solution operates at room temperature, dispensing with heating apparatus. It is simple, available in quantities at low cost and safe. Time of treatment is short and not critical with little danger of over treatment. It emits practically no dangerous vapors and is not ordinarily irritating to the skin. The acid produces a bright smooth finish. It can be controlled and checked by simple titration methods.

Hydrofluosilicic acid in concentrations over approximately 10 percent cannot be stored in glass containers for long periods because while it does not attack glass it evolves hydrofluoric acid in time, which does. Both air and nitrate heat treated aluminum stock respond to its cleaning action with facility.

rise above 130°F. Beyond 180°F. there is a tendency for the silicates in the cleaner to salt out on the parts and make it difficult for the etchant to readily attack. These silicates appear as a white powder deposit. The tank for this cleaner should be constructed of wood or iron.

2. Thoroughly rinse parts without delay in air-agitated hot water of 140 to 160° F. for at least 3 minutes.
3. Immerse parts in a tank of hydrofluosilicic acid for the following times:

.016" to .030"—6 minutes

.031" to .064"—8 to 10 minutes

A plastic-lined or wood tank, preferably cypress, may be used to hold hydrofluosilicic acid. The



Acme spotwelding machine used by Ryan Aeronautical Company for many applications. This type of machine is water-cooled and electronically timed.

solution is prepared by using 3 percent by volume of 27 to 30 percent hydrofluosilicic acid, and .1 percent by weight of Nacconal NR in water. This is equivalent to 3 gallons of 27 to 30 percent H_2SiF_6 and 13.45 ounces of Nacconal NR plus water required to make 100 gallons of solution. Operating temperature is room temperature. Wetting agents, such as Nacconal NR, reduce interfacial tension and produce rapid, even and efficient wetting of the metal surfaces.

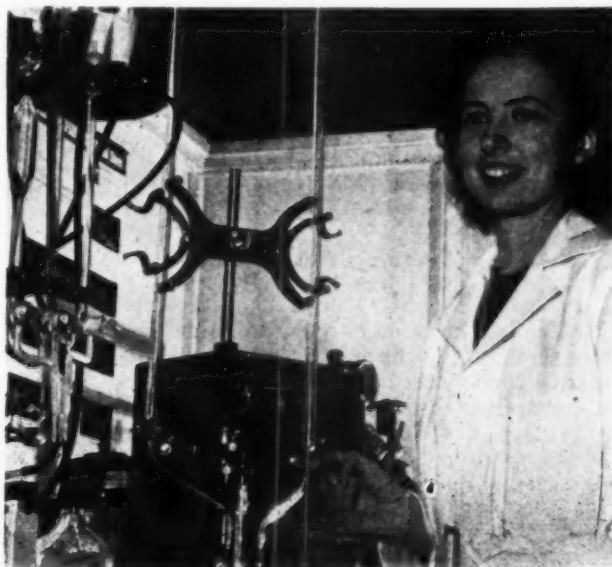
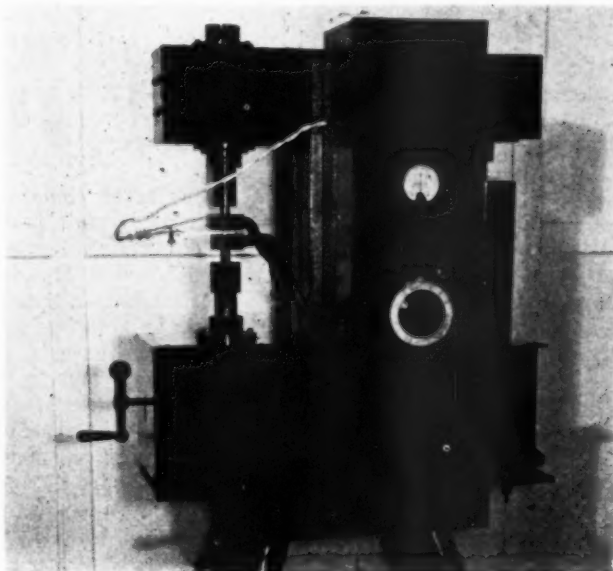
4. *Thoroughly rinse parts in cold running water without delay for 2 minutes or less. Flush top of tank off with water before withdrawing parts. The immersion of Alclad 24ST sheet in hot water is a potential source of trouble because of the formation of oxides on the surface which render it unsatisfactory for spotwelding and are difficult to remove.*

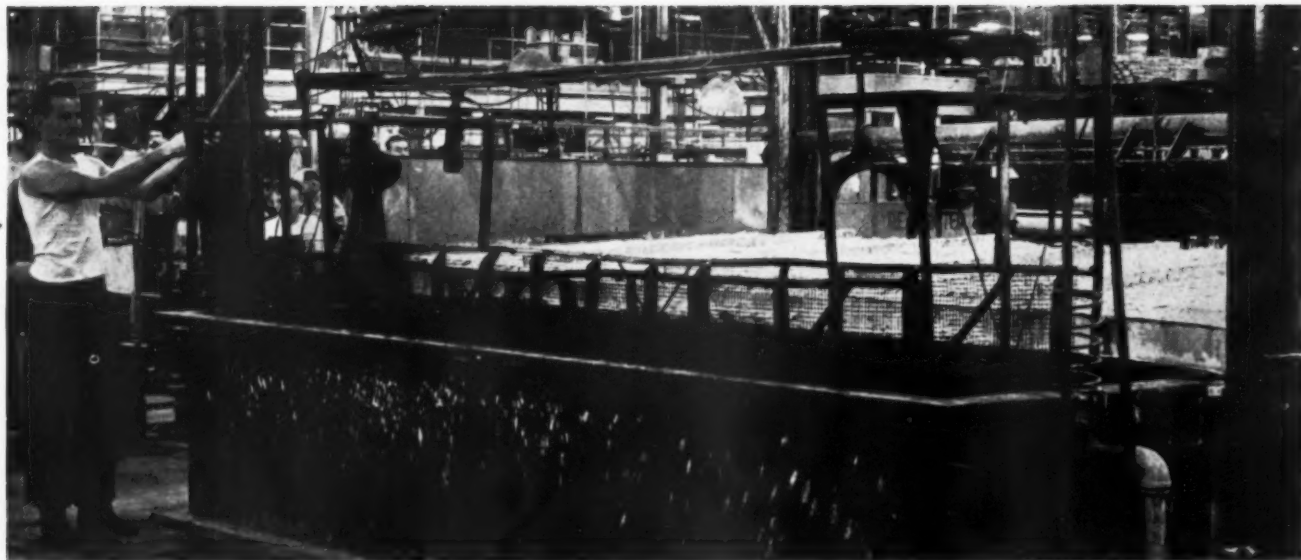
5. *Dry parts in hot air drying tank using hot air blast or air dry. Stand parts on edge wherever possible.*

If parts are heavily soiled with grease or oil preface the above operation by cleaning parts with trichlorethylene vapor which is circulated around them in a galvanized steel tank. Many methods of degreasing and removing dirt and oil prior to oxide cleaning include the use of hot alkaline solutions of sodium phosphate (Na_3PO_4), sodium carbonate (Na_2CO_3), soap and some silicates. The aluminum is readily attacked by these alkaline solutions if the pH is greater than 8.0. However, the presence of silicon dioxide (SiO_2) in the form of soluble silicates forms a protective silicate film on the surface which inhibits the alkaline attack. This inhibiting action allows the use of cleaning materials giving solutions having a pH value of 11.0 without attack. Rinsing of all the precleaning solution is extremely important.

Left: Surface Resistance measuring machine made in Ryan Laboratory for controlling surface cleaning processes.

Right: Chemist performing titration experiment to determine effectiveness of cleaning solution.





Nitrate salt bath for heat treating aluminum alloys.

Don't Delay Rinse

Alclad 24ST should be thoroughly rinsed immediately after cleaning in a hot alkaline solution containing a silicate inhibitor. The metal must not be allowed to dry. This must be done both after precleaning prior to spotweld surface preparation and after cleaning prior to heat treatment if surface treatment is to follow.

Parts should be dated by ink stamp and spotwelded within 3 days after cleaning. Parts which become dirty due to handling or atmosphere, or which are not cleaned within 3 days, should be re-cleaned. Operators should wear rubber gloves and goggles when working around acid solutions.

It is interesting to note that special investigations have disclosed that a reaction sometimes occurs between freshly cleaned aluminum sheet and the final rinse water which raises the contact resistance.

When this occurs, the contact resistance increases rapidly with increased immersion time and water temperature. This reaction is especially noted when the water contains Cl or HCO_3 ions. Even distilled water has been involved in this reaction because it usually contains dissolved carbon dioxide, from factory atmosphere, and is slightly acid in nature. In these cases a small addition of potassium dichromate ($\text{K}_2\text{Cr}_2\text{O}_7$) to the acid tends to retard the reaction with the rinse water.

Cleaning Results Tested

Probably the most successful method for determining the efficiency of cleaning solutions is by regular measurement of the contact resistance of test specimens. This method is more reliable than checking the concentration of the bath. The total amount of aluminum cleaned per day in a cleaning tank affects the life of the solution. Making additions to the solution to correct the concentration and pH will not always maintain the cleaning action of the solution without deterioration after a certain point in the tank life.

Measurement of the contact resistance of specimens

cleaned are made by placing the two samples in the jaws of a press and clamping them together. The Ryan Aeronautical Company laboratory has constructed this type of testing machine which holds the specimens together with 1,000 pounds of force. A current is passed across the faying surfaces of the samples and the voltage drop is measured by solving Ohm's law equation. In order to obtain the immersion times for a production preweld cleaning procedure, it is necessary to make resistance measurements for drawing a set of cleaning curves. This is done by plotting the average contact resistance against immersion times. The curves are made for the alloys and gages required. At least ten resistance determinations should be taken for each curve point. Then, daily resistance determination (ten pairs) may be taken from tank samples to determine the solution life and effectiveness. The most satisfactory operating range of surface resistances is between 20 and 100 microhms with .032 inch alloy.

An examination of the curves will show that (1) thin gages of metal have high contact resistances at optimum immersion times which are low, (2) thick gages have much lower contact resistances at optimum immersion times which are relatively higher, and (3) the thin gages should be cleaned with much more care than the thicker ones.

Excessive contact resistance values after cleaning indicates that (1) the solution has deteriorated from use, (2) the cleaning procedure has not been followed, (3) the cleaned material has been exposed to the atmosphere too long, (4) the solution has been contaminated, (5) the solution concentration or acid has deviated from the optimum value, or (6) the material is below .040 inch thickness and the contact resistance values are in addition a function of the past heat treatment history of the metal. Any of the above reasons except (6) will adversely affect the quality of the spotwelding. By careful routine electrical measure of contact resistances the responsibility for improper cleaning can be placed where it belongs rather than upon the spotwelding machine.

The Idea Exchange

Production ideas others have found useful. Your ideas are invited. Illustrate if possible.

"Put a Crimp In It"

AN INGENUOUS device with which sheet metal up to 16-gauge may be crimped either at the bench, on the job or after installation, has been perfected by Frank Lucarelli, Tool Designer of The Glenn L. Martin Company, Baltimore, Maryland.

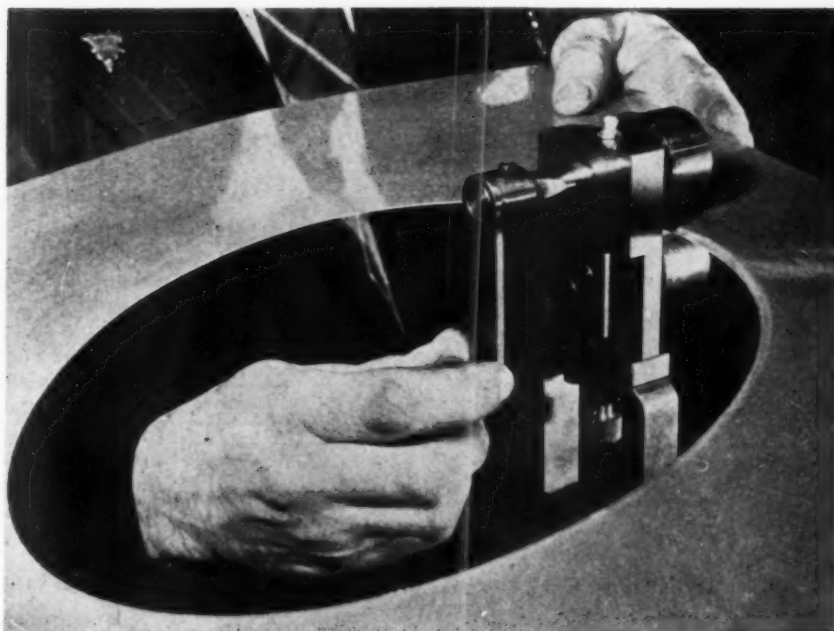
The tool will work equally well on straight edged metal, sheets or pieces curved to any shape, on the inside of blanked-out holes or wherever crimping on sheet metal may be required.

In its general shape, it is not unlike the familiar can opener attached to the kitchen wall or a tool used by shoemakers to crimp pieces of leather together. Two round dies, one with a projecting edge, the other rounded to fit, are held together by spring tension and an adjustable screw to fit them for various thicknesses of metal.

Turning a crank pulls the metal sheet between the dies. Held firmly against a guide, the edge of the metal is crimped to the desired shape. But little physical strength is required for the operation, certainly no more than to open a can of food in the kitchen, and the time saved is at least half as compared with any other hand tool which would perform the same job. The tool may be operated by clamping it in a bench vise, probably its most widely used place.

One of the most important factors is that of safety, when compared with previous methods of hand crimping. Most of these required a tool looking somewhat like an oversize pair of pliers which was literally pulled around the edge of the metal by sheer strength. Having no stationary guide, the device did not always give a satisfactory crimp. It also was dangerous, as the tool sometimes slipped off under the pulling necessary to make it operate, and a nasty gash in the operator's arm resulted. This hazard is entirely eliminated in the Lucarelli device.

Glenn Martin Co.
Baltimore.

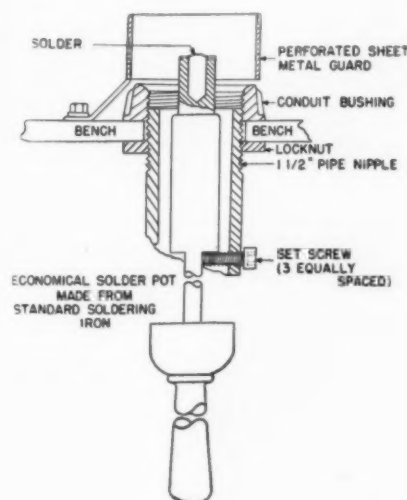


Convert Your Iron

THE use of standard soldering irons especially adapted as small soldering pots has facilitated the production of small instrument-type motors in one of General Electric's Works. Because they present only a very small area for oxidation, the irons are saving materials.

The improvised solder pot is easily built. A standard medium-size soldering iron tip is faced off flat and drilled with a 1/4-inch diameter hole, 3/4-inch deep. This tip is reassembled to the soldering iron. The iron is then mounted vertically in a hole in the bench so that the tip projects about two inches above the top. The mounting is made permanent by the use of a standard pipe nipple locked from the top with an electrician's conduit bushing and from the bottom with an electrician's lock nut. The iron is held in the bushing by

three setscrews which clamp the body of the iron proper.



Short On Profit? — Try Stainless!

By Lawrence E. Gichner

Gichner Sheet Metal Co., Washington, D. C.



STAINLESS steel can prove to be a lifeline to keep many sheet metal shops busy. Today, with shops facing shortages in many materials, the answer to continued activity may be in these sheets of silvery sheen for stainless steel is procurable, special size sheets are available, and where mill shipments are required, deliveries have been made in quick order.

Shops that have worked galvanized iron need no additional or special equipment to handle stainless steel. Only a little more caution in forming is required to avoid marring and scratching. Some shops find it advisable to order sheets with paper attached. Cost is minor and runs only a cent or two a pound more.

Many sales can be made through architects and building owners if the contractor will take the time to do a little original thinking and selling. Many architects do not know that stainless steel is available and they do not realize the many applications in which stainless steel can be utilized to full advantage. Consequently they hesitate to specify this material.

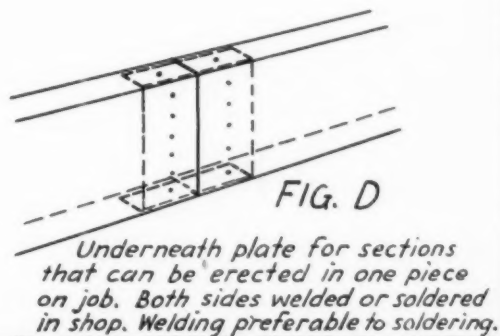
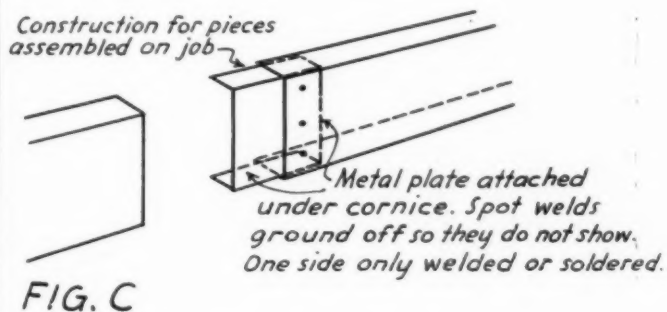
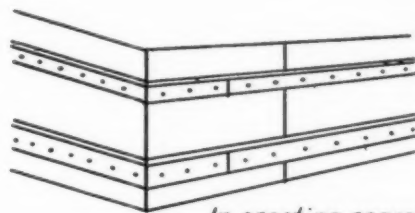
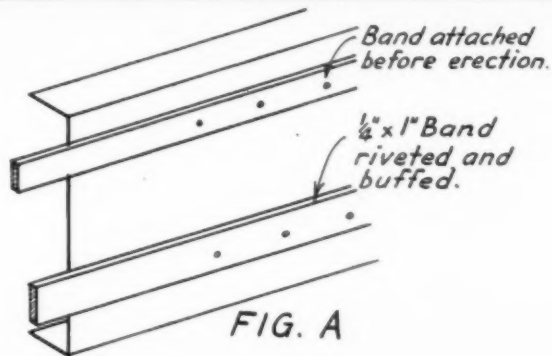
Stainless Will Sell!

Educational work is therefore necessary by the contractor who hopes to stimulate profitable jobs in stainless steel. When an architect can see what can be done, he is usually ready and willing to make his designs accordingly. Show an architect a few designs, sketch up a few ideas that come to mind, or let him see typical work like the accompanying illustrations for inspiration. All were formed on a standard cornice brake and can readily be made in any average shop.

Stainless steel has few equals today in making store fronts attractive and distinctive. It shines. It sparkles. It is alive. It is clean. It gives the passerby a cheery welcome. It invites inspection and entrance. There is no kind of display equipment and no style of show window which cannot be readily improved with the use of stainless steel.

In cornice construction, the old type, complicated wood lookout is unnecessary. The important thing is that the foundations that receive the material and over which the material goes, be firm and plumb.

The pictures on the left show some outstanding applications of stainless steel as a marquis material. Its effectiveness, when used as lettering, is easily seen in these examples.



The above drawings show methods of handling the seams which result from fabrication of stainless steel in decorative exteriors. When the erection is done with care it is possible to present a surface which appears to be seamless.

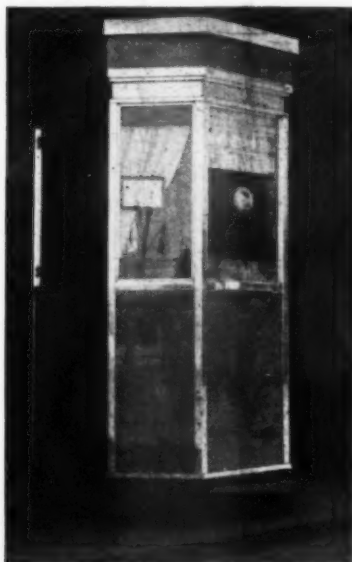
Soldering on seams that are visible should be avoided, for even a skilled mechanic will find it difficult to do satisfactory soldering when both the heat from the iron and the exposure of the surplus solder on the seam tend to give the surface a wrinkled, tinny and distorted effect.

Butt and lap joints are recommended and can be made watertight. Some mechanics prefer to place a strip of metal several inches long under the seam as shown in accompanying sketches. This strip, depending upon construction conditions, can be secured to

both sides if assembled in the shop or to only one side if field erection is required.

Oftentimes it is not necessary to redesign or completely cover a store front to obtain pleasing results. Improving a store front with just a judicious touch here and there of stainless steel, can liven up the entire entrance. As examples, for an accessory shop on a main thoroughfare, catering to distinguished tastes in household decorations and household furnishings, our concern simply covered the woodwork on the entrance door. Results were electrifying, and in con-

Stainless steel is unsurpassed in display and show cases as the examples below illustrate.



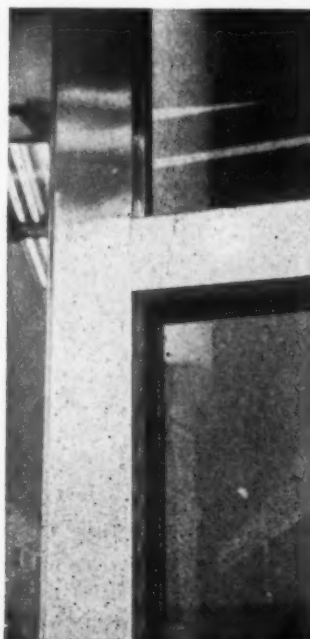
trast to the drab fronts of other surrounding buildings, this store became the most outstanding front in the block.

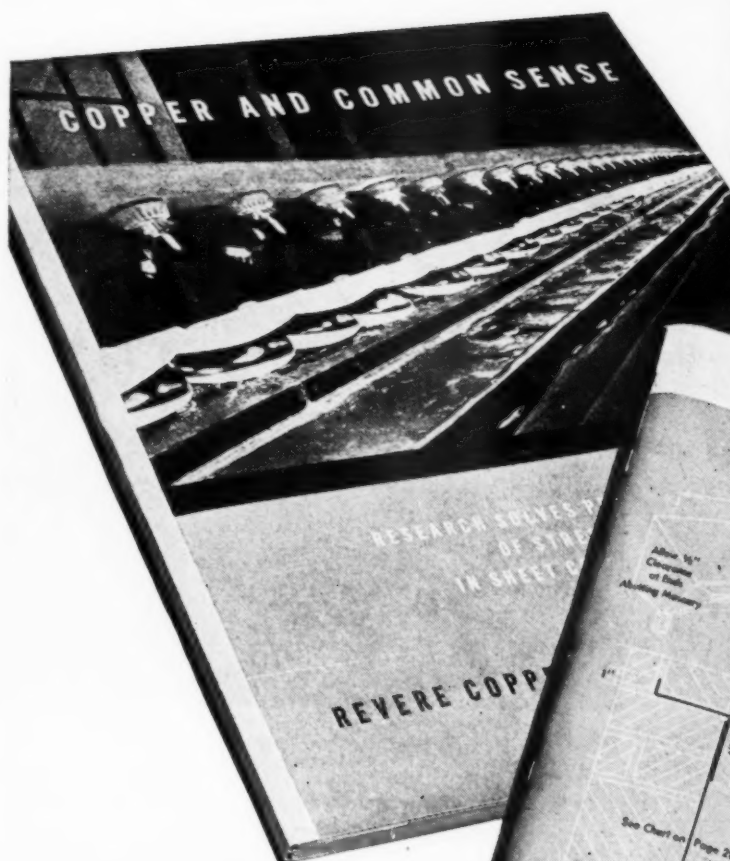
Contrast Counts

The eye appeal of a large restaurant in an old building was lost amidst the dazzle of white porcelain fronts and neon signs of smaller, adjoining cafes. We designed a marquis with massive surfaces and appropriate bold lines; installed indirect lighting on the underneath ceiling; result, our customer's place became the most dominating front on its side of a wide street

A real estate firm was remodeling its offices. A long chest-high counter ran the length of the room. The light-toned wood looked well, but something seemed lacking in finishing it off. We suggested a 10-inch high, stainless steel kick plate for the base of the counter, and the missing ingredient to give finish and solidity to the new furnishings, was added.

To the right stainless is shown blending into existing ornamentation, used in counter and cornice work and also in the production of smooth, gleaming doorjamb. The photos below again demonstrate the individuality that is made possible by the use of stainless steel for lettering on signs.



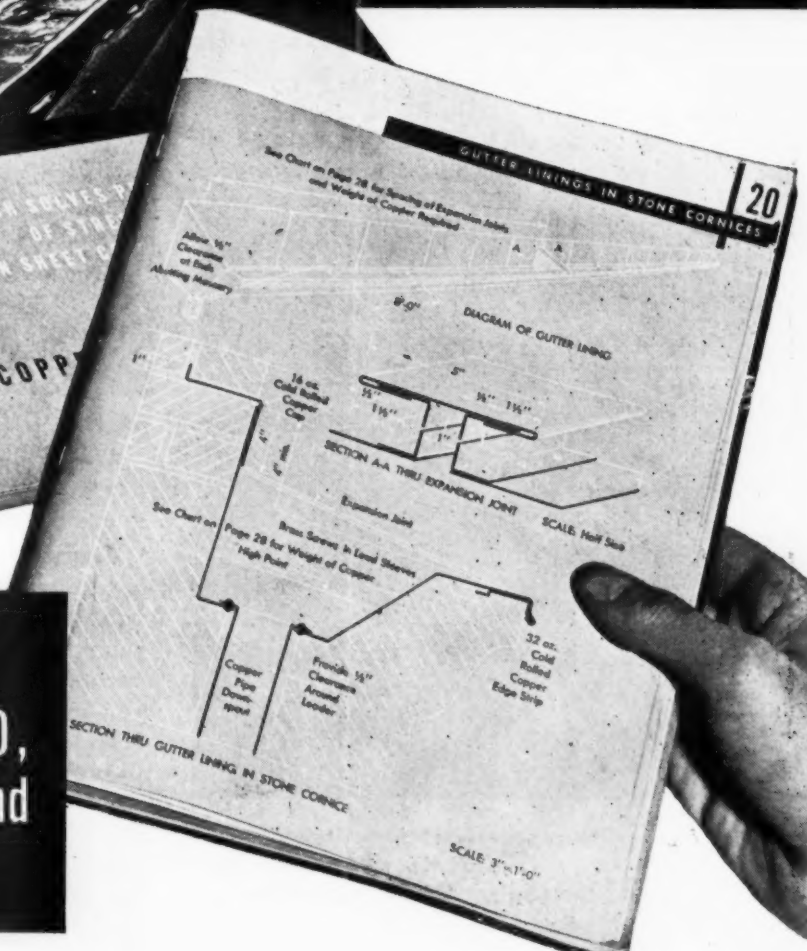


QUESTION:

What's the best way to install gutter linings in stone cornices?

ANSWER:

Detail Sheet 20, Page 71 in "Copper and Common Sense."



Important new facts on sheet copper construction are now available as a result of Revere's research on stress failures. Checked and acclaimed by leading architects and sheet metal experts, Revere's 96-page booklet, "Copper and Common Sense," is a practical guide to durable construction of gutters, flashings, and roofs. That's why it will always pay to refer to this authoritative book.

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If you wish any further aid, call on the Revere Technical Advisory Service, Architectural.

Complimentary copies of this booklet have been sent to all holders of Sweet's Architectural File, and through Revere Distributors to most sheet metal contractors. If you do not have a copy, write for it now while there are still a few available. Revere building products are sold only through Revere Distributors.

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Fig. 1. Holders for beer bottle washer.

fullest extent and thereby get lowest cost production. The pictures show two jobs that are typical of our wide variety of work.

The bottle holders shown in Fig. 1 are 76" long, made of 18-gauge black iron. Spacers are stamped and welded both top and bottom to side members as shown



Fig. 2. Welding spacers in bottle holders.



Fig. 3. Mop buckets. Insert shows parts.

in Fig. 2. All top edges are curled to prevent breakage in loading and to increase rigidity.

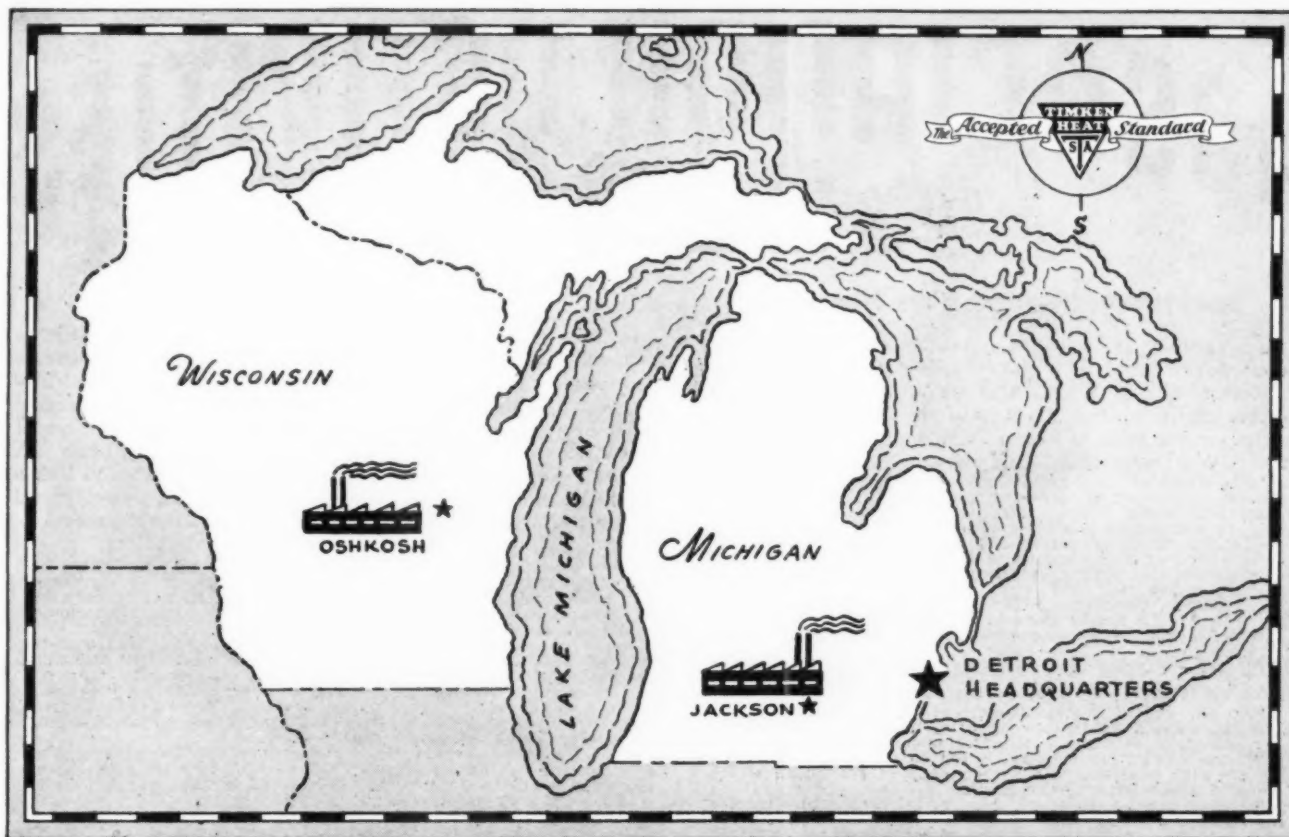
The mop buckets shown in Fig. 3 are designed to have a minimum amount of welding and thereby cut our fabrication costs. We make several sizes from 18-gauge black iron. Back and bottom are formed from one piece. (See sketch). Curved front is rolled to shape and then corner welded with $\frac{3}{32}$ " "Fleetweld 7". Top is curled and reinforced with $\frac{1}{4}$ " round bar, rolled in to provide greater strength and rigidity.



Fig. 4. Carl Weisenburger sets Lincoln Welder control.

Our men are keen about the Lincoln Welders. One of them is shown in Fig. 4 with Carl Weisenburger getting set for the bottle holder job.

Sheet metal welding procedures free on request. Write for Bul. 444. The Lincoln Electric Company, Dept. 453, Cleveland 1, Ohio.



Two New Timken Factories for "The Royal Family of Oil Heating"

TWO GREAT new Timken plants at Jackson, Michigan, and Oshkosh, Wisconsin, are now in production.

The investment of time, energy and money in these new plants has been enormous. But they are ready to roll now . . . ready to turn out Timken Products in constantly accelerating volume.

The reason for this expansion is simple: **THE TREND IS TO TIMKEN!**

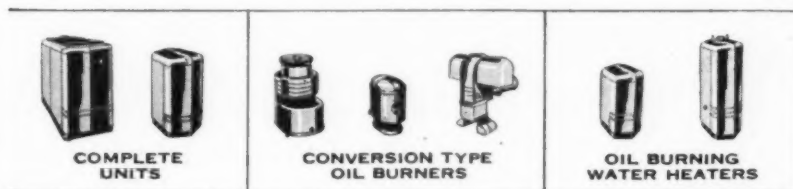
It started *before* the war when each new year set a new sales record. It grew *during* the war when severe war-time conditions proved the soundness of Timken design and the quality of Timken workmanship.

Today it is a tidal wave of demand from people who insist on Timken—who are willing to wait as long as necessary to get a Timken.

It may be several months before shipments can be made the same day orders are received. But when that time comes, Timken production will be equal to any demand imposed upon it—equal to meeting the tremendous demand today's trend so clearly indicates.

Timken and its dealers are ready! . . . ready for the golden age of Timken Oil Heat!

Timken Silent Automatic Division, Detroit 32, Michigan



TIMKEN
Silent Automatic
HEAT

TIMKEN SILENT AUTOMATIC DIVISION
THE TIMKEN-DETROIT AXLE CO., DETROIT 32, MICH.



ASSOCIATION ACTIVITIES



Sheet Metal Contractors National

In a previous bulletin, the Sheet Metal Contractors National Association, Inc., quoted a letter sent to Housing Expeditor Wilson Wyatt and OPA Administrator Paul Porter. The following is a copy of the reply received from Administrator Paul A. Porter regarding the critical shortage of light gauge galvanized sheets:

"The Office of Price Administration has granted price increases amounting to \$11.00 per net ton on galvanized sheets since May, 1945. There exists today a definite shortage in the over-all supply of steel and while additional increase in the selling price of galvanized sheets might tend to increase somewhat the supply of that product, it would tend to decrease the supply of other steel products, which are equally in demand.

"Therefore, this Office believes that the problem to which you refer is no longer curable by further price action but rather one for the proper concern of the Civilian Production Administration."

Following receipt of this letter the association sent the following letter to fourteen steel companies:

"At our recent National convention, the question was brought up relative to the supply of light gauge sheets for our industry. Because of the seriousness of the situation, a special committee was appointed to make inquiries and we are also enclosing herewith a copy of resolution which we sent to the OPA on the subject.

"It is imperative that our sheet metal contractors receive light gauge sheets promptly because most of them are out of sheets and are unable to proceed with business on hand.

"We all had the impression that light gauge sheets were not being manufactured because of the price set up. We herewith give you a copy of a letter just received from the Office of Price Administration, signed by Paul A. Porter. Because of the inference of price increase in this letter we would like to have comment from the manufacturers of steel."

Seven of the fourteen steel companies replied to the association letter: Summarizing these replies, the reasons they give for the shortage are:

1—The price of light gauge galvanized is still not adequate and production will continue to lag until the price enables mills to realize a profit comparable with other items.

2—The abandonment of many hand mills which formerly produced gauges 19 and lighter. These mills are being replaced as rapidly as possible by modern Continuous Cold mills. It is likely that Direction 12 to M-21 recently issued by CPA will divert more of these lighter gauges to warehouses.

3—Even with full production again on its way, today's needs can not possibly be immediately filled by the entire steel industry as a whole.

4—The steel strike and then the coal strike. Direction 12 to CPA order M-21 is intended to channel the flow of steel to the manufacturer and may help.

5—Profit on run-of-mine galvanized when sold at current ceiling prices, is impossible. Costs have increased faster than price increases for galvanized sheets.

6—Actually less sheet rolling capacity exists in this country than in pre-war years, due to the fact that a considerable amount of capacity has been scrapped within the past few years because it became obsolete. While we are not satisfied with the price increases given by OPA, we are producing all the sheets that facilities will permit.

7—The limiting factor has been the labor situation caused by the steel and coal strikes and the inefficiency of labor in general, since V-J Day.

ASHVE Studies Industrial Ventilation

A long range research program has recently been inaugurated as a result of the common interest of the American Society of Heating and Ventilating Engineers and the U. S. Public Health Service in industrial ventilation. Last October, to assure more efficient correlation of the activities of these two groups, Dr. A. D. Brandt of the U. S. Public Health Service was assigned to the ASHVE Research Laboratory, Cleveland.

Using the results of a questionnaire as a guide, a comprehensive long-range program of research was planned to provide quantitative data for the solution of industrial ventilation problems. Work on the program was started immediately, under the direction of Dr. Brandt, and the first two studies have been completed.

Illinois

The Sheet Metal Contractors Association of Illinois gave much consideration to the matter of the Engineers License Law at the convention in Peoria this spring. The head of the Department of Registration and Education at Springfield had then ruled that furnace and sheet metal contractors must take out this license. Now (July 24, 1946) Superintendent of Registration and Education Philip M. Harman advises that while furnace and sheet metal contractors can take out the license, it was not necessary.

Dear Mr. Pluth:

"I am sorry for my delay in replying to your letter of July 12th. Of course, it is now too late to do anything pertaining to the matter under discussion, but it may be that I can clarify for you as to whom in your field should be licensed as professional engineers.

"It certainly is not the intention of the law that dealers in heating, air conditioning, refrigeration or ventilating units, shall be required to be licensed. Neither is it necessary for a dealer, who is required to exercise his judgment as to the size of a unit or the size of pipes in connection with it or who has to know the type of unit to take care of a particular sized area, be licensed.

"The law provides that a professional engineer is one who designs the physical parts of the unit. That is, the person who actually designs the unit itself is the person who is required to be licensed.

"You mentioned cases where contractors buy only needed parts from the various producers and then assemble these parts as they see fit to make a complete unit. There might be a question about those people, but I am of the opinion that they are so small in number that each individual case could be handled on its own merits. Undoubtedly some people in this category have applied and their applications will be passed upon by the Professional Engineer's Examining Committee."

(Signed) Philip M. Harman,
Superintendent of Registration,
State of Illinois, Springfield

In the last paragraph of his letter you will note that he says you can take out the license or not as you desire. It is quite likely the state may decide to send your check back, but there may be some delay—or, they may send the license.—Edward M. Pluth, President.

Carolinas

The July issue of "The Carolinas Roofer" published by The Carolinas Roofing and Sheet Metal Contractors' Association, carries the secretary-treasurer's report presented at the convention at Durham, N. C.

Membership is now 70, seven of whom are new members. One of these new members needed 15 rolls of 15-lb. felt to finish a job, and when he stated that he needed this material to finish a job and get his money, another member loaned him the 15 rolls. A source of supply for cornice cut nails was also located.

The Resolutions Committee reports on labor, waterproofing fabric, legislation, and wage scales are reprinted. Urgent amendments to the S. C. Workmen's Compensation Law are enumerated. The August issue of "The Carolinas Roofer" lists the new committees appointed. Slate Drip boards and splash plates are commented upon in the July issue, and "Why Asphalt Shingles Occasionally Buckle" with suggestions for prevention and correction is illustrated and discussed in the August issue.

J. A. Piper, Editor.

Sheet Metal Institute, Chicago

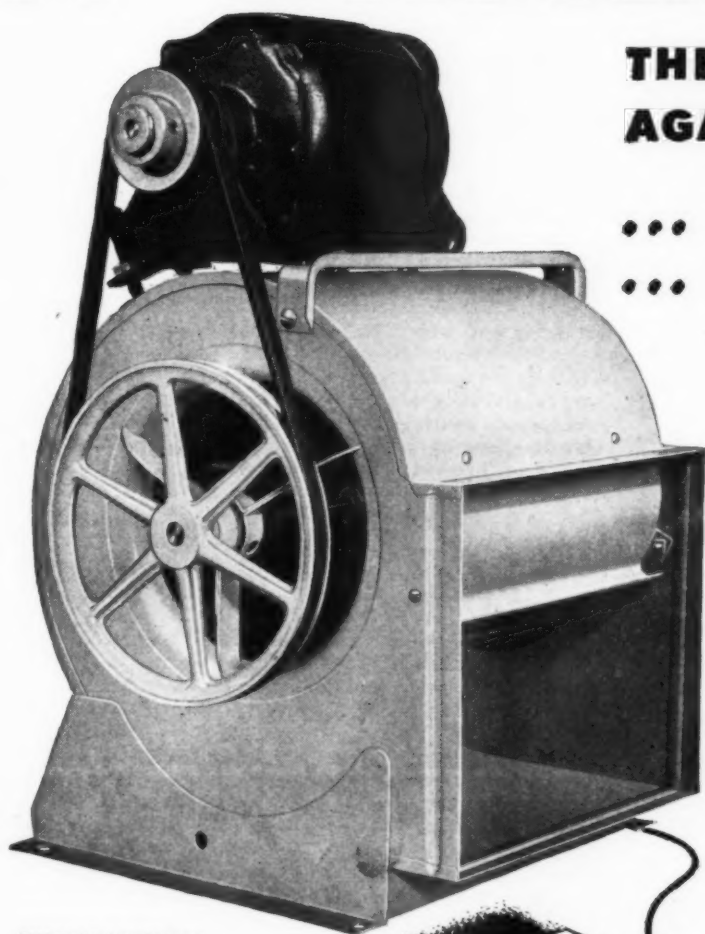
At the June 7 meeting of the Furnace-Air Conditioning Sheet Metal Institute, Chicago, John Novak was voted an honorary member of the Institute.

The June 21st meeting was Father and Son night and (Continued on Page 90)

A CHALLENGE

THE NEW LAU BLOWER AGAINST THE FIELD

... *Performance-wise!*
... *Price-wise!*



SPECIAL FEATURES
Patents Applied For

Amazingly LOW COST
We engineered this New LAU Blower and geared a production line to mass produce it at unheard of low unit cost. NOW, no one can afford to buy components for assembly—waste labor—secure uniform results of hand work. Buy the complete assembly

New CENTER-SUSPENSION WHEEL

• Exhaustive tests have proved the center-suspension wheel is still far superior to any other type of construction. The New LAU Series "A" Blower Wheel has more advantages . . . greater mechanical strength . . . truer concentricity . . . greater air flow into the wheel (than other wheels of similar diameter and blade length). DETAILS GLADLY SUPPLIED TO INTERESTED PARTIES UPON REQUEST.



LAU

BLOWER COMPANY

DAYTON 7, OHIO, U. S. A.

WORLD'S LARGEST MANUFACTURER OF FURNACE BLOWERS

Engineers and fabricators of general Air Handling Equipment • Single Inlet and Double Inlet Blowers • Propeller Fans • Accessories

Association Activities . . .

well attended. Rollin Tippet acted for Secretary Arthur Johnson (present but left early on account of an infected jaw).

The Education Committee has a 10-week educational program for members, to embrace engineering; installation practice; servicing of oil, stoker and gas units and controls; selling; and advertising. A special committee under Barney Sanders has this program under way.

The Institute picnic at Long Lake on Sunday, July 14, was a success and good fellowship prevailed.

The July 19th meeting was well attended and some very important subjects vital to our business, were discussed.

The Institute meets the 1st and 3rd Fridays at the Institute Research Building, 1916 W. Fullerton Ave., Chicago. Arthur Johnson, Secretary.

Los Angeles

The Institute of Gas Heating Industries of Los Angeles held their June meeting at Stevens' Nikabob Cafe.

Entertainment was by Francine Fay, and a color film entitled "A Pipeline Licks The Weather" was shown through the courtesy of the Southern California Gas Company. The picture was made as a result of this company's pipeline project running from La Goleta, California, to Los Angeles. La Goleta has a natural underground gas storage capacity equivalent to the combined volume of all the gas holders in the United States. In the winter time, the Southern California Gas Company draws gas from La Goleta to meet the domestic gas load. In the summer time the field is recharged with surplus gas. The gas is moved through a 100-mile pipeline varying in diameter from 18 to 24 inches. The picture pointed out some of the terrain difficulties encountered in laying the line from La Goleta to Los Angeles.

The meeting was called to order by President Lawson. Gene Grau has prepared membership application forms and made them available to members for action, and asks members to have one new applicant at the September meeting of the Institute.

President Lawson read a letter from Mr. Theobald, Chairman of the Ordinance Committee, regarding new requirements for rules and regulations to govern the examinations for certificate of qualification of journeymen (heating plant installer) and heating contractors. The recommendations outlined were as follows:

For Journeyman Heating Plant Installer:

1. Obtain a grade of at least 70 percent, determined as follows:
 - A. Written portion of the examination to count 80 points.
 - B. Oral portion of examination to count 20 points.
2. Must show at least an equivalent of two years experience as a helper or apprentice, such equivalent to be training in a recognized training program or substitute certification determined at the discretion of the examining board.

For Master Heating Plant Installer:

1. Obtain a grade of at least 70 percent, determined as follows:
 - A. Journeyman written portion of examination to count 40 points.
 - B. Contractors written portion of examination to count 40 points.
 - C. Oral portion of examination to count 20 points.
2. Applicant must be able to show at least an equivalent of two years experience as a journeyman in the heating and ventilating industry, such equivalent to be training in a recognized training program, or substitute certification determined at the discretion of the examining board.

C. A. Gabriel made a motion that the recommendations as outlined be accepted by the Institute and that they be submitted to the Department of Building & Safety for adoption. F. F. Alleman seconded the motion. The motion was voted upon by the members of the Institute and was approved unanimously.

President Lawson read a letter from R. P. Cravens, Secretary, Building and Safety Commission to the Institute regarding suggested amendments to the Warm Air Heating Contractors Ordinance. The suggested amendments were discussed at the June 3, 1946, meeting of the

Board of Building and Safety Commissioners and were referred to the Institute for comment. The suggested changes are as follows:

Exception (2) of Section 95.01.1 of Ordinance No. 90,030 be amended to read:

"Any apprentice or person assisting or helping to perform such work in the presence of and under the direct supervision of either a Warm Air Heating Contractor or a Journeyman Heating Plant Installer."

An additional provision to Ordinance No. 86,232, reading as follows:

"Sec. 95.01 (b) No Warm Air Heating Contractor shall employ any person to act in the capacity of a Journeyman Heating Plant Installer, unless there has been issued to such person by the Board a valid and unrevoked Certificate of Qualification as a Journeyman Heating Plant Installer. No person shall hire or employ any apprentice in violation of any provision of this article."

R. B. Sutphen made a motion that the suggested amendments be accepted by the Institute. H. B. May seconded the motion. The motion was voted upon by the Institute and was approved unanimously.

Mr. Wicks reported that a city attorney had been assigned to work on the new code. Definite action can be expected by the fall meeting.

Paul Speers stated that applications will be sent out in the near future and that educational classes will actually be formed starting sometime in September.

H. M. O'Haver is gathering data for a new program of publicity and advertising. The material will be presented at the September meeting.

A motion was introduced by J. C. Jenkins to investigate the possibilities of the local educational institutions to incorporate heating courses in the curriculum. The motion was seconded by L. K. Ward and passed by the members. President Lawson formed a committee, consisting of the following members to investigate the idea: J. C. Jenkins, Chairman, Joe Wilson, W. O. Wylie.

O. N. Simmons, Acting Secretary.

Buffalo

At a dinner meeting in the Hotel Markeen in June, the Buffalo Sheet Metal, Warm Air Heating & Air Conditioning Association had as its guest speaker Walter P. Davis of Detroit, managing director of the Indoor Climate Institute.

Mr. Davis urged better public education to encourage the sale of more central heating systems. The Institute plans a five year advertising program on a national basis to promote central heating and will sponsor numerous local councils throughout the country to act as a link between the trade and the public—the purpose being to develop a demand for a better quality heating system at a higher price per job, a greater share of the building dollar.

A. O. Stilwell of the Producers' Council, Inc., explained the purpose of that organization and J. Harold Genrich, president of The Niagara Frontier Builders' Association, Inc., warned of the socialistic trends of our present government and how it seems to be entering into competition with free enterprise for scarce materials and labor.

A brief lecture was given covering proper methods for sizing basement trunk lines. Attendance, 79.

M. J. Rodman, Secretary.

Wisconsin

The Sheet Metal Contractors Association of Wisconsin, Inc., held their third District meeting in Fond du Lac on Saturday, July 13, at the Retlaw Hotel, with a nice attendance.

Consideration was given to labor matters, direct selling by jobbers and manufacturers, warm air heating and air conditioning, natural gas for Wisconsin, and other matters pertinent to our industry. All present entered into the discussions and several resolutions were adopted. The labor committee made a splendid report.

The meeting adjourned at 5:30 p. m., after which a splendid lunch with refreshments was served and sociability reigned for hours.

Paul L. Biersach, Secretary.

(Continued on Page 98)



Anaconda Advertising

in these 6 home magazines

—combined circulation—

8,500,000

YOU'LL FIND these magazines in the better homes in every community—being read by the very people who make the best customers for sheet metal work.

All through the war, Anaconda advertising appeared in leading magazines month after month—telling the convincing story that it pays to build with copper and brass, that a rustproof home costs little more at first... and a lot less in the long run.

When you quote on repair jobs or new construction, include a bid based on Anaconda Sheet Copper—the quality standard recognized by more people than ever before.

4899



Anaconda

COPPER

THE AMERICAN BRASS COMPANY

General Offices: Waterbury 88, Connecticut
 Subsidiary of Anaconda Copper Mining Company
 In Canada: ANACONDA AMERICAN BRASS LTD.,
 New Toronto, Ont.

Equipment Developments

For your convenience a number has been assigned to each item. Circle the items in which you are interested on the coupon on page 108 and mail to us.

△ Indicates manufacturer not listed in 1946 Directory.
● Indicates product not listed in 1946 Directory.

78—Di-Acro Brake No. 4

O'Neil-Irwin Manufacturing Co., Minneapolis 15, announces Di-Acro brake No. 4 in a 24-in. capacity. Features include special material clamping action which makes possible extremely sharp bends; double-edge vertical folding plate allows close reverse bends to be formed; Torrington



roller bearings; quickly adjustable material gauge for precision in all duplicated parts; and precision angular degree stops.

The Di-Acro brake No. 4 has a material capacity of 16-ga. sheet steel and a maximum forming width of 24 inches; weighs 285 pounds, with a sturdy machine tool iron base casting.

79—Lincolnweld Process

The Lincoln Electric Company, Cleveland 1, Ohio, announces improvements of its weld head designed to simplify production installation setups and increase speed of operation for its "Lincolnweld" hidden-arc process of automatic metallic shielded arc welding. The new, improved head is designated as the "LAF-2."

To further expand its use on sheet metal work, the "LAF-2" has been designed to accommodate a 3/32-inch electrode. The head is shipped with the same lower wire contact jaws as the previous head designated as "LAF-1" which accommodates electrode wire ranging from 1/8-inch to 7/32-inch, but an extra movable tapered contact jaw is supplied which can be quickly interchanged if 3/32-inch wire is desired.

The controls of the "LAF-2" have been modified to simplify arc starting.

80—Vacuum-Draft

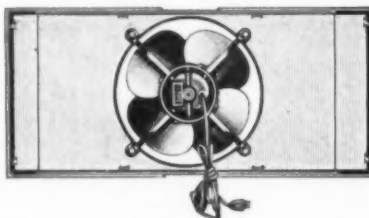
The Norge-Heat division of Borg-Warner Corporation, 670 E. Woodbridge St., Detroit 26, is introducing a new vacuum-draft oil-burning furnace which eliminates the need for the standard chimney as a draft-creating device. This new "chimneyless" furnace is designed to create its own draft through the use of a suction fan which pulls air through the combustion chamber. A controllable fire results, and the ordinary chimney may be eliminated and an exhaust vent substituted.

Available in three models, the largest of which develops 120,000 Btu bonnet output; 1200 cfm; two 16 x 25 in. filters; centralized, visible servicing; factory wired; factory tested; automatic humidifier; horizontal fire tunnel; spiral "ramp" economizer; electric ignition; basement or utility room installation; meets code regulations; low operating cost; quick, low-cost installation.

81—Kitchen Fan

The Emerson Electric Manufacturing Co., 1824 Washington Ave., St. Louis 3, Mo., has designed a new 12-inch kitchen ventilating fan for quiet, slow-speed operation with large overlapping blades for exhausting a large volume of air.

This new ventilator operates on 53 watts and exhausts 900 cubic feet



of air per minute. It is equipped with off-and-on switch and U.L. approved extension cord and plug; a fully enclosed, dust-proof motor designed to give continuous operation without overheating; and needs only occasional lubrication.

Two sizes of adjustable mounting panels for windows or transoms, 27 to 48 inches in width, are available.

Fan is finished in black lacquer, mounting panel in gray enamel.

82—Oil-Tank Gauge

The Krueger Sentry Gauge Company, of Green Bay, Wisconsin, announces the new model "At-A-Glance"

oil gauge, developed for oil tanks for either 1½ or 2 in. opening. The reading scale is securely encompassed between two circular domes, providing four reading windows.

Listed as standard by Underwriters Laboratories, Inc., "At-A-Glance" gauge is a simple lever action that moves the indicator disc up or down with tank contents.

The inner dome is made of a hard, well annealed, fling glass and the outer dome is constructed of unbreakable plastic material, cushioned at the base with enoprene and vellumoid gaskets.



83—Water Pan Filler

Viking Air Conditioning Corporation, 5600 Walworth Ave., Cleveland 2; announces the No. 11 automatic water pan filler, intended to keep the warm air furnace humidifying pan



filled with water. The automatic float tank filler is easily installed in any water pan and is connected to the water line by copper tubing and a saddle-type shutoff valve.

Introducing the new

Roof Ventilators and Vent Flue Caps

Airjets are the newest development in wind induced or gravity type ventilators. They are designed to bring highly efficient ventilation to commercial and public buildings and to residences at a moderate cost. Their extreme efficiency is proved by certified ratings of performance from the California Institute of Technology. Check these outstanding features •

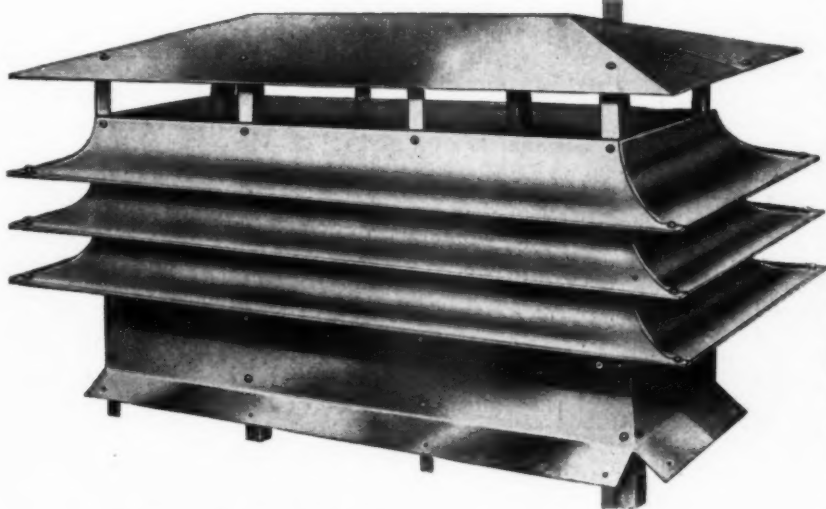
LOW SILHOUETTE—particularly adapted to present-day architecture • LIGHT WEIGHT—need not be mounted over roof trusses—no additional bracing necessary—available in aluminum • NO DOWN DRAFT—regardless of wind direction • NO BASE REQUIRED—price of ventilator is price of complete unit ready to install • SHIPPED "KNOCK-DOWN"—facilitates and economizes storage and transportation—easily assembled with speed tubes.

MANUFACTURED BY

C. R. Gelert

C O M P A N Y

35 NORTH RAYMOND AVENUE
PASADENA 1, CALIFORNIA

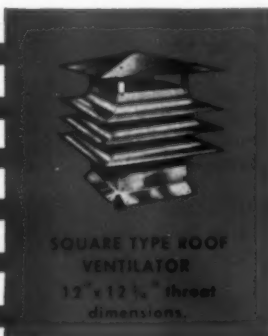


RECTANGULAR TYPE ROOF VENTILATOR

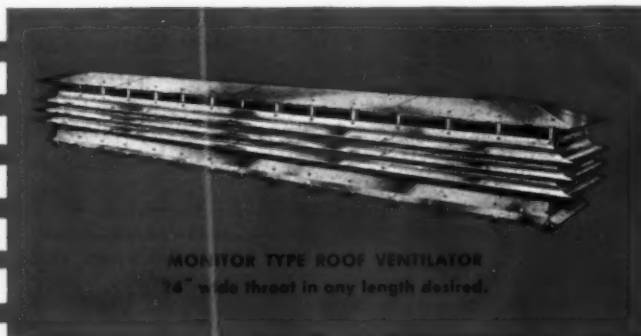
Available in the following throat dimensions:
12" x 24 3/4", 12" x 36 3/4", 12" x 48 3/4",
24" x 48 3/4" and 24" x 72 3/4".



VENT FLUE CAP
4" and 6" diameter
throat dimensions.



SQUARE TYPE ROOF VENTILATOR
12" x 12 1/4" throat
dimensions.



MONITOR TYPE ROOF VENTILATOR
16" wide throat in any length desired.

SEND FOR COMPLETE INFORMATION
A few territories still available for
Exclusive Franchise Dealers.

C. R. GELERT COMPANY
35 North Raymond Avenue
Pasadena 1, California

Please send me your new catalog on Airjet Roof Ventilators and Vent Flue Caps.

NAME _____

COMPANY _____

ADDRESS _____

CITY _____ ZONE _____ STATE _____

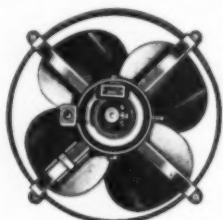
Equipment Developments

For your convenience in obtaining information regarding these items, use the coupon on page 108.

84—Kitchen Fan

The Emerson Electric Manufacturing Company, 1824 Washington Ave., St. Louis 3, announces a new 16-inch kitchen ventilating fan designed for exhaust duty for small restaurant kitchens, shops, lavatories, etc.

Its features include: slow speed operation; overlapping blades for



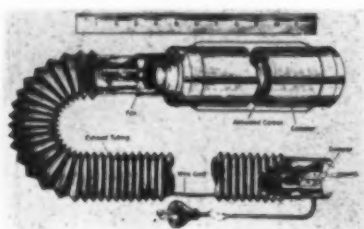
quiet operation; fully enclosed dust-proof motor for continuous operation without overheating; operates on 66 watts and exhausts 1650 cubic feet of free air per minute.

This new ventilator has an outlet box attached for connection of conduit and can be easily mounted on a suitable panel board. Automatic outside shutters are available.

85—Deodorizer

W. B. Connor Engineering Corp., 114 E. 32nd St., New York 16, has developed the Dorex deodorizer for use in hospital evacuation planes, or in hospitals and wherever it is desired to remove odors emanating from a highly localized or confined origin.

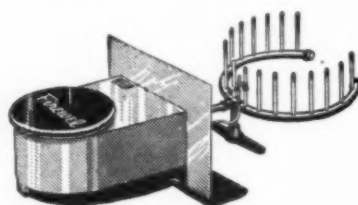
In operation the perforated activated carbon-filled canister is placed



as near as practical to the odor source. The fan continuously draws the odor-laden air through the carbon canister where the odors are entirely extracted and discharges the thus purified air to the surrounding space. In so doing, the Dorex deodorizer creates a slight negative air pressure or suction under the blanket, thereby preventing any exfiltration of odorous air. The exhausting of but 10 cfm is sufficient both to maintain satisfactory results and inhibit drafts perceptible to the patient.

86—Firewell Burner

Nesbitt & Meidenbauer, Lancaster, N. Y., offer the Firewell gas burner for home heating, tested, listed and certified by AGA. Features include



heat-anticipating thermostat, full automatic control, quiet operation, spring-fall-winter control, limit control, safety pilotstat, pressure regulation, simplicity of design and universal conversion.

87—Improved Electrodes

The Lincoln Electric Company, Cleveland 1, announces two improved electrodes for shielded arc welding of stainless steels. Known as "Stainweld A 7" and "Stainweld A 7-Cb," they are made for welding steels of the 18 per cent chromium and 8 per cent nickel type in all positions.

"Stainweld A 7," which was discontinued during the war, has been improved and is now being manufactured. It is recommended for use with stainless steels designated by American Iron and Steel Institute as numbers 304 and 308. Available in 1/16, 5/64, and 3/32-inch sizes; 18-inch lengths, center grip and 1/4, 5/32 and 3/16-inch sizes; 14-inch lengths, end grip.

"Stainweld A 7-Cb" is columbium stabilized and has operating characteristics similar to "Stainweld A 7." This electrode is recommended for use with stabilized 18-8 stainless steels designated by American Iron and Steel Institute numbers 321 and 347.

Furnished in 3/32-inch size; 18-inch length, center grip and 1/4, 5/32 and 3/16-inch sizes; 14-inch lengths, end grip.

Both "Stainweld A 7" and "Stainweld A 7-Cb" shielded arc electrodes are also recommended for weld-surfacing where an austenitic (work-hardening) surface of medium hardness and good corrosion resistance is required.

Properties of all-weld metal specimen (average for various sizes of electrodes): Tensile strength—85,000 to 95,000 pounds per square inch. Elongation is 2 inches—35 percent to 50 percent.



88—Conversion Burner

The L. J. Mueller Furnace Company, 2005 W. Oklahoma Avenue, Milwaukee 7, announces production has begun on the Climatrol gas-fired conversion burner, in three sizes—125,000, 175,000 and 225,000 maximum Btu inputs. Climatrol conversion burners are AGA listed for installation in coal furnaces. Features are an electric igniter and a burner and baffle of different design. The cast iron burner contains a deep, narrow, circular, slotted gas port around which the flame burns. The flame is aerated on both sides. The port slants outward toward the sides of the heat exchanger with a corresponding slant on the durable, heat-resistant, removable, stainless steel baffle.

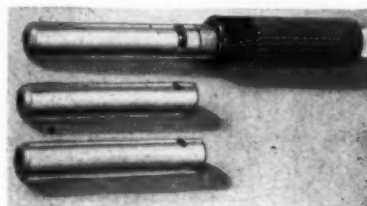
Automatic pilot lighting is obtained by means of a non-cycling electric pilot igniter. After a small knob, located outside the front housing, is moved to the lighting position, an electric coil becomes hot and ignites the pilot. Upon releasing the knob after lighting is completed, spring action moves the coil out of the flame and away from the high heat area.

Made of cold-rolled steel, the housing is finished in a soft shade of baked green crinkle lacquer, highly resistant to both heat and chipping.

89—Air-Acetylene Tips

Acet-A-Tips Company, 5069 W. Madison Street, Chicago 44, announces an attachment to adapt any standard oxy-acetylene welding torch for body soldering, tinning and light brazing with an acetylene-air flame.

Acet-A-Tips are attached to the welding torch tip by means of a base,



fitted with a two-inch length of heavy-duty two-ply hose. The hose is forced over the welding torch tip, providing quick, positive attachment.

Acet-A-Tips, available in three sizes, are precision-machined from solid brass bar stock.

THE BARTON CONVERSION GAS BURNER

AGA APPROVED

**AVAILABLE for
IMMEDIATE
DELIVERY!**

Including all controls—transformer,
thermostat, limit control safety pilot



Converts Hot Air, Hot Water or Steam
Heating Plants to Modern Gas Heat



BARTON is the dealers' choice! Its one size and model fits firepot sizes from 14" to 30"—round or square heating plants. No need to carry a large stock of different sizes and models. BARTON's single size and model... pre-assembled at factory... assures easy, profitable installation... complete customer satisfaction.

PRECISION ENGINEERED—BARTON's precision engineering combines best features of other burners with exclusive innovations and advanced design. Delivers higher heating efficiency... even temperature... dependable, trouble-free, economical operation.

SAFER—Because all working parts, including gas valves, controls and gas pressure regulator, are completely protected by attractive, sturdy, enamel finish burner housing. Children can't tamper... no way control settings can be disturbed.

CLEANER—All-enclosing BARTON burner housing is finished in easy-to-clean, smooth baked enamel. No dangerous or unsightly projections. No dust-catching crevices... no exposed mechanisms to collect dirt.

PROFITABLE INSTALLATION—BARTON's all-in-one unit is completely pre-assembled at the factory... ready for quick, time saving installation. Each BARTON installation a more profitable installation because of uniformity and assured results on each conversion.

EXACT FIT—No matter the type heating plant... round or rectangular... hot air, hot water or steam... BARTON's improved wall-flame type burner with spreader-baffle directing flames to sidewalls assures perfect conversion... higher heating efficiency.

GUARANTEED—The BARTON is unconditionally guaranteed for one full year.

Dealers: Mail This Coupon, Now

Quick action will bring you immediately full information regarding the BARTON Gas Burner. Don't delay getting complete details about America's outstanding conversion gas burner and the full profit-making story for you!

THE BARTON COMPANY
64 Glenwood Avenue
Minneapolis 3, Minnesota

Gentlemen: I want to know more about BARTON's profit-making story. Please send me complete information today!

Name.....

Company.....

Address.....

City..... State.....

THE BARTON COMPANY

64 GLENWOOD AVENUE • MINNEAPOLIS 3, MINN.

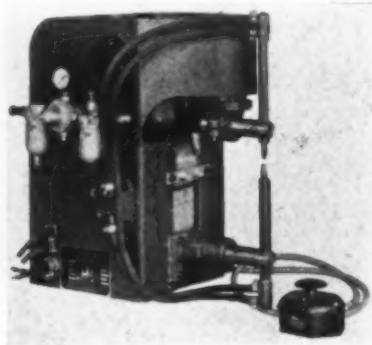
Equipment Developments

For your convenience in obtaining information regarding these items, use the coupon on page 108.

△ 90—KVA Spot Welder

Universal Welder Corporation, 715 Carnegie Avenue, Cleveland 15, is producing a moderately priced 7½ KVA Midget automatic bench type air operated spot welder.

Four steps of adjustable weld heat control delivers a secondary maximum



of 12500 amperes so that it may successfully weld two thicknesses of 16-gauge clean sheet steel.

An air accessory unit consisting of an air filter, air regulator, pressure gauge and air lubricator insures clean lubricated air delivery to the air cylinder.

Operating equipment includes an improved pressure switch, fast four way solenoid air valve, a long life heavy duty butt contact type inbuilt welding contactor, an air flow regulating valve for adjustment of point impact speed and a convenient foot switch and water cooled electrode holders for No. 1 Morse taper welding tips.

Standard units have a throat depth of 9 inches. Up to 16 inches can be obtained by factory modification of the upper cylinder press head mounting.

△ 91—Cold Process Roofs

The Flintkote Company, Building Materials Division, 30 Rockefeller Plaza, New York 20, N. Y., offers a cold process adhesive, Fibrex II, and Nu-Static roof coating, both specially formulated for spray application, for built-up roof construction and roof maintenance.

The "Package Unit," containing a 60 cu. ft. compressor, 1 Alemite Versatal Pump, 1 5-ft. spray gun, 175 ft. material hose, 190 ft. air hose, 1 hose reel and 1 parapet roller, may be purchased as a unit or individually.

Both adhesive and top coating are applied cold right from the original factory container. Spray application speeds up the rate of application.

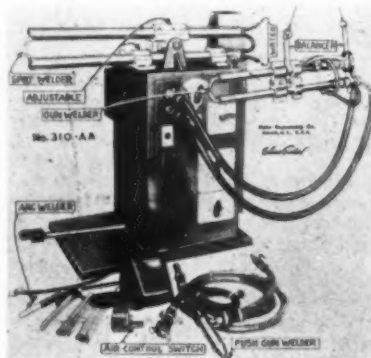
92—Flux-Coated Rod

The Linde Air Products Company, unit of Union Carbide and Carbon Corporation, 30 East 42nd St., New York 17, has developed a new flux-coated bronze welding rod for application by the oxy-acetylene process, known as Oxweld No. 25M. Patented. This flux-coated bronze rod combines all the superior properties of the Oxweld No. 25M. bare bronze rod with correct fluxing. When the rod is made, it is pre-coated with flux in proper proportion to its size. This coating consists of Brazo flux plus a non-active binder that does not affect the weld. It adheres firmly to the rod, melting down into the molten puddle without burning off ahead of the rod. The rod can be heated and bent without destroying the coating. In addition, the coating is not affected by weather conditions.

93—310-AA Welder

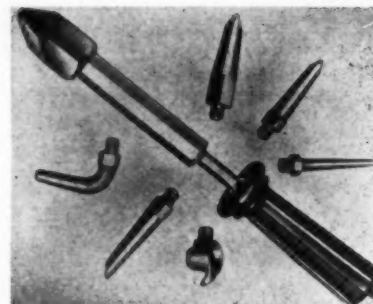
Eisler Engineering Co., 750 S. 13th St., Newark 3, N. J., offers the No. 310-AA Universal spot welder, suited for spot welding all types of sheet metal work. In addition, the unit can be used with a hand-operated push type and tong type gun welder, and for A. C. arc welding (100-400 amps). The gun welder can also be supplied with air operation.

A feature of this machine is the deep throat provided by both horns



which can be lengthened or shortened by sliding them in the bearings to fit the size and type of sheet metal work to be welded. Another advantage is that the horns are mounted on top of the fabricated case and thus the machine is suitable for spot welding large sheet metal parts.

The machine is intended for deep sheet metal work of light gage, but will also weld heavier work in the short throat position. The KVA rating of the welders can be from 20 to 50 KVA at the shortest throat depth. The horns as well as the tip holder and tips are water cooled.



94—450-Watt Kwikheat

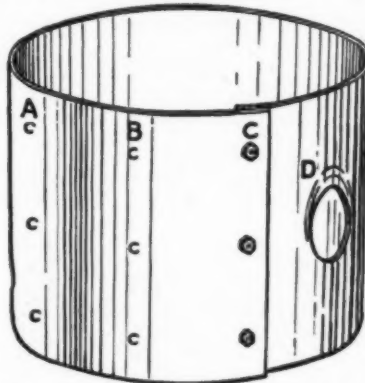
Sound Equipment Corporation of California, 3903 San Fernando Road, Glendale 4, California, announces that now the Kwikheat soldering iron—with built-in thermostatic heat control—is available in both 225 Watt and 450 Watt sizes.

The new 450 Watt iron has ample power for most any soldering job including sheet metal work—yet because the power is always kept under control by the patented thermostat, the same iron can be used for delicate radio work. Seven different tip styles can be interchanged on the 450-Watt iron and a new extra-heavy tip takes advantage of the full power.

One of the biggest advantages of the Kwikheat iron is its fast heating time—only 90 seconds after plugging in it is hot, ready to use. Because of the thermostat it can never overheat, tips last longer, need retinning less often and efficient, uniform soldering is produced. The iron is extremely light for its power (25 oz. with the heaviest tip), is well-balanced and has a safe, cool Bakelite handle.

△ 95—Stainless Fire Box

Petroleum Equipment Mfg. Co., 75 Brewster St., New Haven 6, Conn., offers the Pemco stainless steel fire box for new installations, conversions or replacements. This one chamber is



adjustable from 1 to 2.25 gph and can be used only with domestic gun-type high pressure oil burners, and up to 2150 deg. F. temperatures. The Pemco weighs less than 9 pounds.

The Pemco stainless steel chamber is a corrosion and heat-resistant alloy, and is easily installed.

Installation instructions are given in Technical Bulletin No. 202.



PROVED-

MOST EVEN HEAT

WITH NORGE-HEAT'S NEW
OIL-BURNING WINTER AIR-CONDITIONING
FURNACE

No "cold 70's." No over-heating. Nothing but consistently even heat to promote health, save fuel and insure customer satisfaction.

This even heat is due to the combination of remarkable inventions found only in NORGE-HEAT oil-burning winter air-conditioners. These include such improvements as: the Whirlator combustion head which automatically controls the *uniform* mixture . . . horizontal combustion chamber of stainless steel . . . horizontal fire tunnel with full 17-foot flue ramp . . . inverted flue outlet which retains heat on off-cycle . . . plus the sensational vacuum-draft.

This remarkably even heat has already been proved beyond question . . . proved under every condition in 3500 homes for four years! The much lower fuel consumption and installation cost have likewise been proved in this practical laboratory.



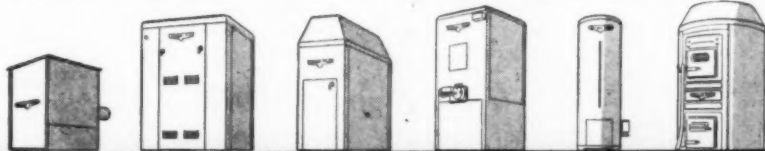
NEW COMPLETE LINE OFFERS MORE PROFITS

Norge products are favorably known in every home, and the complete line of NORGE-HEAT units—backed by the skill and facilities of the Borg-Warner Corporation—offers unusual advantages to the established heating dealer. Write the friendly NORGE-HEAT folks today for the latest information.



Norge Heat

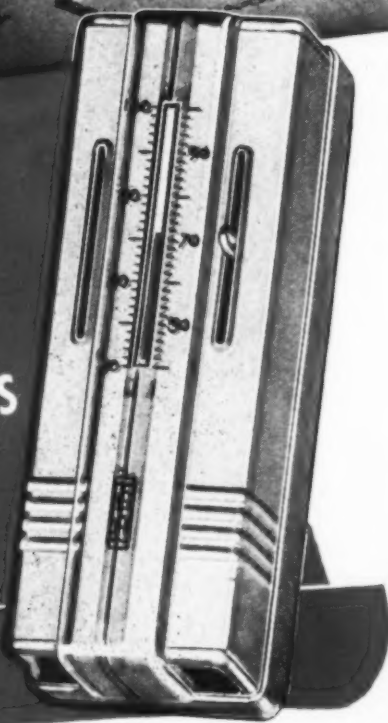
Division of Borg-Warner Corporation • 574 East Woodbridge Ave., Detroit 26



FOR
FALL DELIVERY...



ORDER
G-A
THERMOSTATS
NOW!



The delivery situation on fast-selling Gleason-Avery Thermostats is improving steadily. But we can assure early delivery only on orders received promptly.

Make sure your customers will enjoy the advantages of safe, dependable G-A Thermostats this year. Make sure of plenty of those profitable, trouble-free G-A Thermostat sales. Order now.

Approved by
Anthracite Industries Laboratory.

No. 130 Furnace Sentry Unit Package

Provides accurate temperature control for hand-fired domestic heating systems. Comes complete with easily operated G-A Thermostat (finished in attractive mar-proof Mirror-Lite) . . . plus damper motor and all accessories, ready to install. Direct orders accepted when accompanied by wholesaler's name.

Gleason-Avery, INC.
AUBURN, N. Y.

A RELIABLE NAME IN TEMPERATURE CONTROLS

Association Activities . . .

SMA Official Family

The officers of the Stoker Manufacturers Association as elected by the Board of Directors at the recent annual meeting at Colorado Springs for 1946-1947 are:

PRESIDENT—Walter Sormane, Conco Engineering Works, Mendota, Illinois.

VICE PRESIDENT—George W. Graham, Eddy Stoker Corporation, Chicago.

SECRETARY-TREASURER—Claude A. Potts, U. S. Machine Corporation, Lebanon, Indiana.

STAFF OFFICIALS—Marc G. Bluth, Executive Secretary; Lloyd L. Connell, Technical Director.

The following are members of the Board of Directors as elected by the membership by secret mail ballot:

Walter Sormane, Chairman.

C. T. Burg, Iron Fireman Mfg. Co.

George W. Graham, Eddy Stoker Corp.

F. H. Herndon, Link-Belt Company.

J. M. McClintock, Illinois Iron & Bolt Co.

Claude A. Potts, U. S. Machine Corp.

Howard E. Sill, Muncie Gear Works, Inc.

J. H. Simpson, Hershey Machine & Fdy. Co.

Milton A. Young, Catskill Metal Works.

President Sormane will shortly announce appointments to the various standing committees for the 1946-47 period.

Application Engineering Conference

A two-day application engineering conference was held at the Holland Hotel in Duluth, Minnesota, on July 16 and 17, under the auspices of the National Warm Air Heating and Air Conditioning Association. G. A. Voorhees, the association engineer, officiated.

Although this conference was held on very short advance notice, 52 dealers, salesmen and wholesalers' representatives registered. Many came a long distance from points in North Dakota, Wisconsin, Northern Michigan and Minnesota. With two weeks more previous notice,



the attendance would easily have doubled according to John P. Nelson, manager of the Heating Division of Kelley How Thomson Company, who was chairman of the local committee which made the arrangements. Emil Jensen, manager of Marshall-Wells Company's heating department, was co-chairman.

George Boeddener, managing director of NWAH and ACA, who was scheduled to address the meeting, could not make it because of transportation conditions and got only as far as Chicago, much to the disappointment of those present.

All those in attendance were enthusiastic about this type of instruction for better engineered installations. They also expressed themselves to the effect that the Conference was well worth while from the standpoint of time and money spent in attendance and are anxious to come to the next meeting when it is held in 1947 and preferably earlier in the year.—J. P. Nelson.

Indoor Comfort Educational Bureau

The Indoor Comfort Educational Bureau has been formed by the industry, and located in the Terminal Tower Building, Cleveland 13, as an information center
(Continued on Page 100)

ANNOUNCING

a new *Rybolt* line of

Gas Furnaces



Series RG 54
Forced Air

RYBOLT announces a new line of gas furnaces in gravity and forced air in a range of sizes to meet most residential requirements. These gas furnaces for homes large and small, old or modern, are unusually compact, conserving precious space. A special feature is their universal application for basement or utility room. Extremely attractive in design and finish, this new RYBOLT line has further advantages of easy installation, ready accessibility to all parts, and important advanced engineering features.

These furnaces have been given approval tests by the American Gas Association Testing Laboratories. Facilities are being set up now for quantity production of these new models.

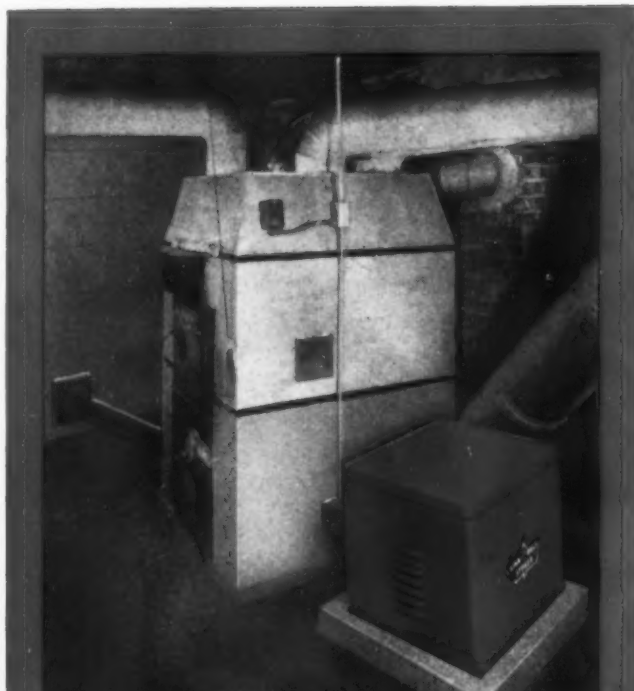


THE RYBOLT HEATER COMPANY

615 MILLER STREET



ASHLAND, OHIO



Easy Stoker Installations for difficult heating jobs

The simple, rugged, standardized construction of Link-Belt Automatic Coal Stokers makes installation and servicing easy, no matter how complicated the heating setup.

The illustration above is an example. The location of the coal bin required installation of the bin-fed stoker at an angle from the side. With the Link-Belt stoker this was easy, since the bin-fed units are available with variation in length of coal screw.

Link-Belt stokers are backed by a highly effective selling plan. Write for details of our dealer franchise.

10441

LINK-BELT COMPANY

Stoker Division

2410 W. 18th St.

Chicago 8, Illinois

LINK-BELT
Magic Flame and Power-Flex
STOKERS

Association Activities

working in close association with the indoor comfort research program being conducted at the University of Illinois.

Research by the industry in the past 20 years has shown that there are seven factors involving the conditioning of air before a home can have complete year-round indoor comfort. The purpose of the Indoor Comfort Educational Bureau will be to disseminate information to the public on these factors and benefits

Coal Bin—Ash Bucket to College

Bituminous Coal Research, Inc. (representing the soft coal industry) in co-operation with the University of Illinois, will soon begin a three-year study of planning and design of homes to be heated by coal.

This project will consider such subjects as coal storage and handling, ash handling, furnace location, and the arrangement of heating facilities for most convenient use of coal. It will involve study of equipment and house plans, and development of suggestions for builders and homeowners.

The University's department of architecture will be in charge of the project and will appoint a research professor to conduct the investigation. Bituminous Coal Research, Inc., of which Dr. H. J. Rose is director of research, will furnish funds. The project was arranged by the Small Homes Council at the University, which will publish the findings.

The architectural approach will distinguish this investigation from other activities of Bituminous Coal Research, Inc., which has sponsored considerable work in developing and testing chimneys, stokers, and heating equipment.

The University of Illinois research to make coal a more convenient home fuel will involve several phases. The first will be a study of the most effective use of existing coal-burning and coal-handling equipment and facilities.

In the second phase, this knowledge will be applied to developing various types of house plans, emphasizing basements or heating plant layouts, and suggestions for architects and contractors who are planning homes for coal heat.

Publication of basic reference material may result. This would include data and diagrams on such subjects as proper construction for dustless coal bins, dimensions necessary to get coal into the furnace by hand or with mechanical equipment, location of the furnace in relation to the coal bin, and installation of efficient ash-handling equipment.

A third phase in the research project will be the development of new ideas in coal handling equipment and arrangement. This will include a study of home trends, such as basementless houses, and their relation to coal as fuel.

Basementless homes and smaller homes may call for new ideas in delivering and storing coal. Smaller furnaces and stokers may be required. Such needs, if found from the architectural studies, will be passed on for mechanical development with the assistance of Bituminous Coal Research, Inc.

This new project at the University may, according to Professor W. H. Scheick, lead to construction of a test house at the University's new Home Research Center to try out new ideas and designs. Construction of such a house on the campus would have the benefit of the University's experts in all fields—architecture, engineering, home economics, etc.

A recent University engineering development is the Illinois smokeless furnace, which can burn soft coal without smoke and with excellent control, to prevent overheating and make a considerable fuel saving. Stoker coal also is being studied on the campus by the Illinois State Geological Survey, whose headquarters and laboratories are there.

Sell "DETROIT" FLOAT VALVE EQUIPPED



SPACE HEATERS
FURNACES
RANGES
WATER HEATERS

*And Profit from
Small Home Building*

An enormous program of small and medium size home building is getting under way. All these homes need heating equipment. All of them want clean, reliable heat if they can get it.

"Detroit" Float Valve equipped space heaters, furnaces, ranges and water heaters enable you to sell these homes clean, reliable oil heat in its simplest, most trouble-free form. Such heating

equipment is economical enough in first cost to appeal to the big market.

"Detroit" Float Valves are simple and extremely reliable. They provide a sturdy, long lasting and satisfactory control. When you find one on a heater, you know the manufacturer has used the best available control.

For nearly 20 years, "Detroit" Float Valves have held a leading position through merit.

DETROIT LUBRICATOR COMPANY



General Offices: 5900 TRUMBULL AVENUE, DETROIT 8, MICHIGAN

Division of AMERICAN RADIATOR & Standard Sanitary CORPORATION

Canadian Representatives — RAILWAY AND ENGINEERING SPECIALTIES LIMITED, MONTREAL, TORONTO, WINNIPEG

"Detroit" Heating and Refrigeration Controls • Engine Safety Controls • Safety Float Valves and Oil Burner Accessories • "Detroit" Expansion Valves and Refrigeration Accessories • Stationary and Locomotive Lubricators

Association Activities . . .

Oil-Heat Engineering Committee

The principal activities of the Engineering Committee of the Oil-Heat Institute of America, Inc., includes participation in the "Test Program on ASTM Reference Fuel Oils."

The subcommittee of the Engineering Committee developed the preliminary design of standard reference burner—the purpose of which is to permit tests of fuel oils to determine their combustion and flame characteristics since physical properties alone are not fully indicative of the burning qualities. Drawings have been completed and quotations have been received from five concerns to make the sample equipment.

Most manufacturers of vaporizing pot-type burners reported favorably on Commercial Standard CS-E-104.43, even though they were not satisfied with the arbitrary method of determining net capacity as 95 per cent of the gross capacity. The managing director of OHI has offered the co-operation of the Engineering Committee in any further revision of this standard.

Other activities of the Engineering Committee include:

1. Consideration and recommendation of changes in the proposed Oil Burner Installation Standards of the Distribution Division.
2. Bridgeport oil burner code.
3. Joint Committee on Weather Statistics.
4. Suggested subject matter for ASHVE chapter on Oil Heating.
5. Proposed oil burner equipment standards.

F. H. Faust, Chairman, OHIA Engineering Committee.

Engineering Societies Coordinate

The Engineering Societies Council of New York has been organized, comprising delegates representing the

local chapters of engineering, scientific and technical societies.

The following officers have been elected: Chairman, H. C. R. Carlson, of The American Society of Mechanical Engineers; Vice Chairman, H. P. Wall, American Society of Safety Engineers; Secretary, M. P. Davis, American Society for Testing Materials; and Treasurer, H. F. Dart, Institute of Radio Engineers.

The following directors were elected: O. B. J. Fraser, of the American Institute of Mining and Metallurgical Engineers; E. J. Lyons, American Institute of Chemical Engineers; W. F. O'Connor, American Chemical Society; C. S. Purnell, American Institute of Electrical Engineers; H. J. Ryan, American Society of Heating and Ventilating Engineers; and E. M. Sherwood, American Society for Metals.

The purposes of the new Council as outlined in the constitution adopted are as follows:

To provide a medium for cooperative action by the member societies on matters of mutual interest which are beyond the scope of the individual organization or which can be performed better by cooperative action.

To encourage interest and participation in public affairs which are scientific or technical in scope.

To cultivate greater appreciation by the public of the part which engineering, science and technology contribute to human welfare.

To provide a means of more effective public service by the member societies of the Council.

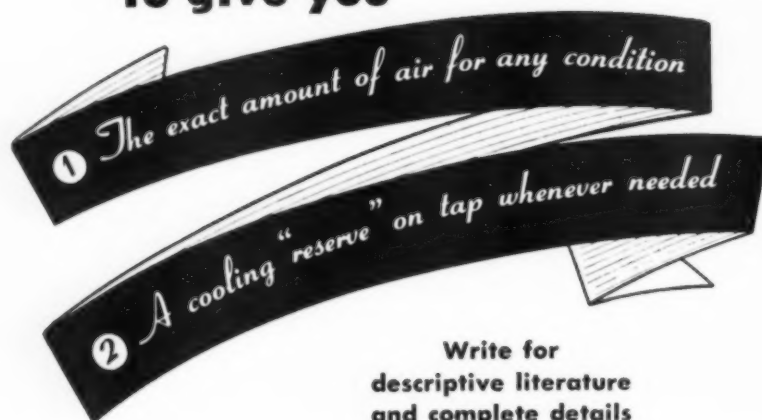
To promote greater unification of the engineering profession and co-operate in a general program for the enhancement of the professional status of the engineer.

To promote coordination and integration of the inter-organization activities of the member societies.

To publish information of interest to the member societies.

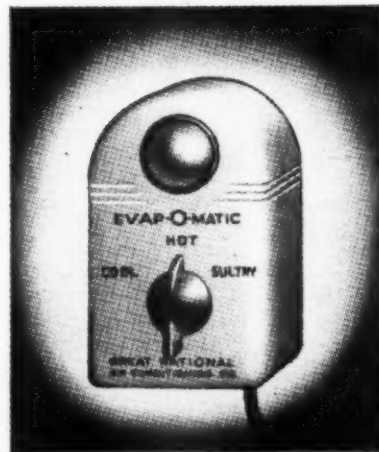
To co-operate with organizations having similar objectives in other communities.

... it takes **EVAP-O-MATIC** to give you



Write for
descriptive literature
and complete details

Thousands of stores and shops are looking for a low-initial-cost, low-operating, efficient "something" to compete with expensive air-conditioning. The answer is in Great National's Evaporative Cooling — with the sensational new EVAP-O-MATIC climatic control. It's the poor man's cooling system.

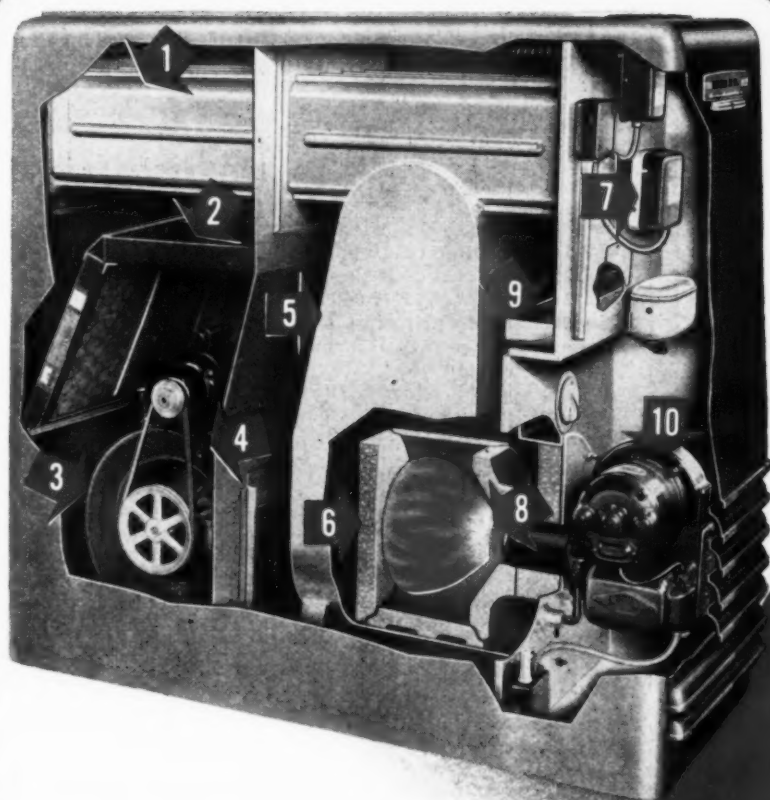


THIS IS "IT"

..just the
flick of a switch

Great National Air Conditioning Co... Dallas, Texas

Read the Story of *Greater Profits* in this cutaway view of **HEIL'S NEW ACTIV-AIR OIL-FIRED FURNACE**



THESE ARE THE FEATURES YOU ASKED FOR TO MAKE SALES EASIER

- 1 Quadruple, streamlined flue passages, effectively baffled, assure maximum heat transfer efficiency.
- 2 Large-area, replaceable filters provide clean air with minimum resistance to flow.
- 3 Oversize, low-speed blower is base mounted to reduce noise and vibration—provides ample capacity for large houses with low heat loss.
- 4 Quieter, smoother operation is assured by three-point, floating power motor mount.
- 5 Gas-tight, shielded-arc and seam welded heat exchanger of copper alloy steel assures long life.
- 6 Pre-cast combustion chamber brings flame to efficient operating temperature instantly—minimizes sooting.
- 7 Primary control, limit switch and fan control are front mounted for accessibility—all wiring in color coded harness.
- 8 Flame of symmetrical pattern and stable front maintains high CO₂ efficiency and eliminates pulsation even at low firing rates.
- 9 Automatic humidifier instantly accessible through low level door in front panel.
- 10 Bracket-mounted burner has ample space on all sides for inspection or adjustment when unit door is removed.

What you see here is the inside story of a basically new and different kind of furnace-burner unit that brings you every important sales feature you've always wanted... but never had before!

Here, feature by feature, you see the full evidence of Heil engineering leadership. You see what five years of tireless research and development have accomplished in reducing noise and vibration to a minimum... in achieving new peaks of efficiency and operating economy through improvements in every phase of combustion... and in vastly reducing installation and service costs by painstaking attention to the accessibility of every design.

YOU CAN'T AFFORD TO HANDLE ANYTHING BUT THE LEADER

Heil's new "Activ-Air" Furnace-Burner Unit brings you in one package thrilling new styling that assures more sales... advanced engineering that keeps you ahead of competition... and the quality construction for which Heil products have been famous for over a quarter of a century. Here is the unit that means more profits for you because it's designed the way you want it!

THE HEIL CO.

GENERAL OFFICES • MILWAUKEE 1, WISCONSIN

GET THE FACTS ON A HEIL FRANCHISE BEFORE YOU DECIDE

Your choice of a line decides your profit picture... that's why you'll want all the facts about a Heil franchise now. Here's what it means to you... a friendlier method of doing business... realistic quotas... whole-hearted co-operation... and intelligent merchandising assistance. Mail the coupon today for Heil's book showing all models in full color and giving complete details on the franchise that means more profits for '46.

MANY VALUABLE TERRITORIES STILL OPEN



THE HEIL CO., Dept. A-8
Milwaukee 1, Wisconsin

Please send me your dealer preview booklet showing color reproductions of Heil 1946 models and complete details about a Heil franchise and openings in my territory.

Name.....
Company.....
Address.....
City..... Zone..... State.....



H&C No. 130 Baseboard Register

To Get What's Needed QUICKEST—

Stick to the sizes called for by the Register Standardization Program of the National Warm Air Heating and Air Conditioning Association. These sizes are being mass produced in large volume in order to provide the best possible service to established dealers under the present trying circumstances. Production of other sizes must be sandwiched in as opportunity permits. Standard sizes are clearly indicated in our new No. 46 Catalog. Ask your jobber for a copy or write to us if you do not have one.

The standardized sizes for the finest of all Baseboard Registers, the H&C No. 130, are as follows:

- No. 132 $\frac{1}{4}$ —10 x 8 for 8" Pipe
- No. 132 $\frac{1}{4}$ —12 x 8 for 9" Pipe
- No. 133 $\frac{1}{4}$ —12 x 9 for 10" Pipe
- No. 135 $\frac{7}{8}$ —13 x 11 for 12" Pipe



HART & COOLEY MANUFACTURING CO.
World's Largest Manufacturers of
Registers, Grilles, Furnace Accessories
HOLLAND • MICHIGAN

In Canada: Hart & Cooley Mfg. Co., Fort Erie, N. Ontario.

New Literature

For your convenience in obtaining copies of New Literature use the coupon on page 108.

173—Weathertherm Direct Fired Heater

Weatherall Engineers, Inc., 3 Friendship St., Providence 3, R. I., is distributing a four-page folder describing the Weathertherm direct fired heater for garages, large factories or fabricating plants, etc., with or without duct work depending upon the space and partitions. The Weathertherm is adaptable to oil, gas or stoker.

174—Full Line Folder

Williams Oil-O-Matic Division, Eureka Williams Corporation, Bloomington, Illinois, offers an accordeon-folded mailing piece outlining the patented features of the Oil-O-Matic Low-Pressure principle of operation with photographs and brief description of all low pressure burners, boiler-burner units and furnace-burner units in the Williams Oil-O-Matic line. A complete descriptive folder for a quick picture of the Oil-O-Matic Low-Pressure line. Available on request.

175—Adjustable Quadrangle

Stewart-Jackson Instrument Company, 215 West Seventh Street, Los Angeles 14, is distributing a four-page folder illustrating and describing the Adjustable Quadrangle—101 instruments all in one.

The "Quad" is made of transparent plastic for architects, engineers, designers and draftsmen, with (1) The Scale of Degrees, (2) The Pitch Scale, (3) The Scale of Percentage Slope, and (4) The Scale of Sines. This instrument was designed to be used in conjunction with a T-Square, parallel straight edge, or a drafting machine.

176—Tempered-Aire with Gas or Oil

Gar Wood Industries, Inc., Heating Division, 7924 Rippelle Street, Detroit 11, offers 6-page folders each covering their gas and oil-fired Tempered-Aire home heating units. Each is illustrated in color, with cutaway views of the unit, the various parts are illustrated and described (combustion chamber firing unit, power unit, firebox-economizer, economizer, blower, flash humidifier and cast iron heat exchanger), followed by ratings and dimensions.

Both are offered in vertical and horizontal assemblies.

177—Automatic Heat for Real Living

Surface Combustion Corp., Toledo, Ohio, has just published "Automatic Heat For Real Living"—a 56-page, pocket-size booklet for distribution to the public through gas utility companies and the heating manufacturer's Janitrol dealers. It describes for the layman in clear, understandable language what heating comfort is and how to get it.

The book tells how to get the degree of comfort wanted in both new houses and the modernization of homes. The advantages of and applications for warm air, gravity and forced circulation; hot water, both gravity and forced circulation; split systems and radiant panel systems with forced warm air or hot water all are discussed impartially.

The book covers the essential factors beyond the heating plant itself in obtaining comfort. Interesting facts are offered about the human body's reaction to various conditions of heat and humidity and the importance of fresh air.



**"Every time he sees a crowd...
he goes into his act!"**

You can't blame a wide-awake distributor for being enthusiastic . . . once he's seen the picture of the new 1946 Fairbanks-Morse Stoker.

NOW IN PRODUCTION

Fairbanks, Morse & Co.

Fairbanks-Morse Bldg., Chicago 5, Illinois

FAIRBANKS-MORSE



A name worth remembering

DIESEL LOCOMOTIVES • DIESEL ENGINES • MAGNETOS • GENERATORS • MOTORS • PUMPS
SCALES • STOKERS • RAILROAD MOTOR CARS and STANDPIPES • FARM EQUIPMENT

New Literature

For your convenience in obtaining copies of New Literature use the coupon on page 108.

178—Thermostat and Pressure Switches

United Electric Controls Company, 69-71 A Street, Boston 27, is distributing a new catalog with information and engineering details on all their thermostats and pressure switches.

179—Fire Resistance of Home Insulation

Kimberly-Clark Corporation, Neenah, Wisconsin, has published and is distributing "Facts About Fire-Resistance of Home Insulation"—10 pages—showing standard test for fire resistance of Kimsul insulation.

180—Champion and Radiant Tuberator

Wheeling Furnace Corporation, Martins Ferry, Ohio, is distributing four-page folders on each of their furnaces—The Champion and the Radiant Tuberator. Each contains features, cutaway illustrations, and specifications.

181—Specification Sheets

Williams Oil-O-Matic Division, Eureka Williams Corporation, Bloomington, Illinois, offers a set of specification sheets illustrating each product in the Williams Oil-O-Matic line of automatic oil heating equipment showing actual photographs and specifications including over-all dimensional diagrams.

182—Rotogravure Paper

Joseph T. Ryerson and Son, Inc., Box 8000-A, Chicago 80, has just published issue No. 18 of the Ryerson Steel Pictorial, an 8-page newspaper size rotogravure paper.

Consisting almost entirely of steel application pictures, the paper illustrates with many striking photographs the diversified uses of steel throughout not only the metal working and fabricating industries but also in other lines.

183—Standard Mineral Wool Insulation

The National Bureau of Standards is releasing from Washington a new Commercial Standard CS-131-46 on "Industrial Mineral Wool Products, All Types—Testing and Reporting." This is the third standard to be released in a series produced through collaboration of the National Bureau of Standards with the Industrial Mineral Wool Institute.

The new standard permits industry-wide, even world-wide, bases of judgment and specification in mineral wool insulation products. The types of mineral wool insulation for which tests have been standardized are blanket, block, board, felt, granulated, industrial batt, insulating cement, loose, and pipe insulation of both blanket and molded forms.

Methods of testing, and methods of reporting established standards, are given for compressive strength, corrosion resistance, density and thickness, fire resistance, moisture absorption, odor emission, shot content (non-fibrous content), temperature resistance, and thermal conductivity of various forms of mineral wool insulating material. Tests for adhesive strength and coverage are given for mineral wool insulating cement, other tests being inappropriate to this form.

The new standard CS-131-46, containing the names of scores of acceptors throughout the mineral wool industry, may be had from the Industrial Mineral Wool Institute, 441 Lexington Avenue, New York 17, New York.



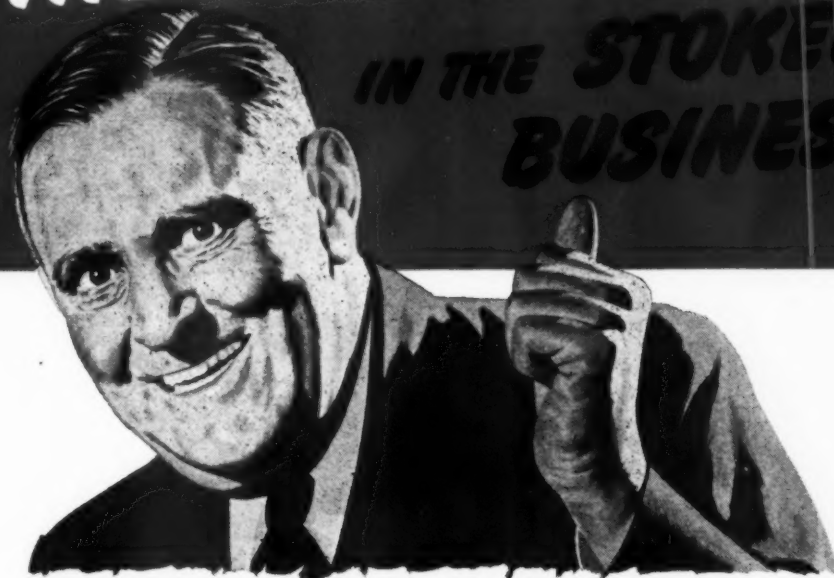
★

Sheet metal men everywhere are turning out accurate work quickly and easily with Niagara machines and tools for shearing, blanking and forming sheet metal.

NIAGARA
MACHINE & TOOL WORKS
BUFFALO 11, N. Y.
District Offices:
Detroit, Cleveland, New York

Combustioneer Dealers SET THE PACE FOR PROFITS

IN THE STOKER BUSINESS!



Dealers who sell Combustioneer make **GREATER PROFITS** in the stoker business because back of them are many years of pioneer experience in successfully building and merchandising coal burners.

The Combustioneer stoker itself is the result of three decades of continuous engineering. It has exclusive features which raise coal burning efficiency to a new, high level never before attained by any other stoker.

For instance, Combustioneer's amazing invention—the Automatic Respirator—is the only stoker air control that *detects by static pressure . . . then measures out . . . the precise amount of air required by the condition of the fire-bed for complete combustion at all times.*

Then to assure that air *reaches* and surrounds each particle of coal, Combustioneer

has a "Pulsating" Transmission. It feeds coal by "*impulses*"—each impulse "*pokes-up*" the fire—keeping it "loose", free-burning. Thus the fire-bed actually "*BREATHES*" guaranteeing complete combustion continuously. **EXTRA** heat energy is extracted from every pound of coal!

Furthermore, Combustioneer is so correctly engineered, and constructed of such rugged and durable materials, that "Dealer Profits" are *not dissipated* by free service demands after the sale . . . Hundreds of Combustioneer Stokers are operating efficiently after ten . . . twelve . . . even fifteen years of hard service.

But that isn't all. Combustioneer's years of analyzing and solving dealer problems . . . of studying what sales promotion materials and selling techniques really **MAKE PROFITS** for DEALERS . . . has resulted in merchandising experience unparalleled in the industry. *The sum total of this merchandising experience is put into the hands of Combustioneer Dealers!*

Add to all this, Combustioneer's *hard-bitting local advertising* to ferret out prospects and generate sales . . . plus Combustioneer's powerful national advertising . . . *and you have the answer to why Combustioneer Dealers make GREATER PROFITS in the Stoker business!*

Choice dealerships are still open in some areas. Write or wire today for complete details!

**COMBUSTIONEER
THE STEEL PRODUCTS ENGINEERING
COMPANY**

1255 W. Columbia St. Springfield, Ohio

*Designers, Engineers and Manufacturers
of Precision Products Equipment*

**CASH IN
THIS YEAR WITH**

Combustioneer

AUTOMATIC COAL STOKERS

FOR HOMES, APARTMENTS AND FACTORIES



New Literature

For your convenience in obtaining copies of New Literature use the coupon on this page.

184—Sip Ring Induction Motors

Century Electric Co., 1806 Pine St., St. Louis 3, is distributing an 8-page catalog covering the Century slip ring induction polyphase motors—one to 350 horsepower—with operating characteristics and illustrating complete motors, stators, rotors, bearings and brushes, and mechanical forms.

185—Attic Ventilation Code

Propeller Fan Manufacturers' Association, 5-208 General Motors Building, Detroit 2, is issuing without charge a new bulletin entitled "Attic Ventilation Code," prepared by the Engineering Committee of the Association. Attempt has been made to set forth the basic requirements of satisfactory attic ventilation. It is believed that contractors, users and others will find the publication helpful in planning the ventilation of houses.

186—Mineral Wool Testing and Reporting

The U. S. Department of Commerce, National Bureau of Standards, Washington 25, D. C., offers a pamphlet entitled "Industrial Mineral Wool Products, All Types—Testing and Reporting—Commercial Standard CS1 31-46," accepted by the trade as a basis for testing and reporting mineral wool products, beginning March 15, 1946. This pamphlet is for sale by the Superintendent of Documents, Government Printing Office, Washington 25, D. C.—Price ten cents.

187—Air-Flo Automatic Shutters

Air Conditioning Products Co., 2340 W. Lafayette Blvd., Detroit 16, is distributing a 6-page folder covering the new Air-Flo weather-sealed automatic shutter—Model A-510—which lets all the air out when the fan is operating and keeps all the air in when the fan is idle.

Dimensions and shipping weights of the A-510 are tabulated.

188—Facts About Home Insulation

The Boston Better Business Bureau, Educational Division, has printed and copyrighted a 16-page 5½ x 8¼-in. booklet entitled "Facts You Should Know About Home Insulation." Contents cover the purpose of insulation; savings; the four main types (board, loose or fill, blanket, batt or quilt, and reflective); heat conductivity; installation and application; vapor barriers; condensation; prices, costs; reliable workmanship; and sources of additional information. Price 5 cents each, coin or stamps.

FOR YOUR CONVENIENCE

American Artisan, 6 N. Michigan Ave.
Chicago 2, Ill.

Please ask the manufacturer to send me more information about the equipment mentioned under the following reference numbers in "New Products" and "New Literature." (Circle numbers in which you are interested):

78	79	80	81	82	83
84	85	86	87	88	89
90	91	92	93	94	95
173	174	175	176	177	178
179	180	181	182	183	184
185	186	187	188		

Name
Company
Address
Are you Manufacturer—Jobber—Dealer—

DEALERS—here's a FLOOR FURNACE you can sell and forget

The original oil burning floor furnace, Kresky is the only one with forced air circulation bearing the Underwriters' label. Four sizes . . . easily installed . . . takes as little as 30" clearance. ★ Altho unprecedented demands necessarily limit current shipments to old customers, Kresky invites negotiations from live dealers for territories still open.

KRESKY MANUFACTURING COMPANY
Pioneers in Oil Burning Equipment Since 1910
PETALUMA, CALIFORNIA

HEATING • COOKING • HOT WATER • INDUSTRIAL

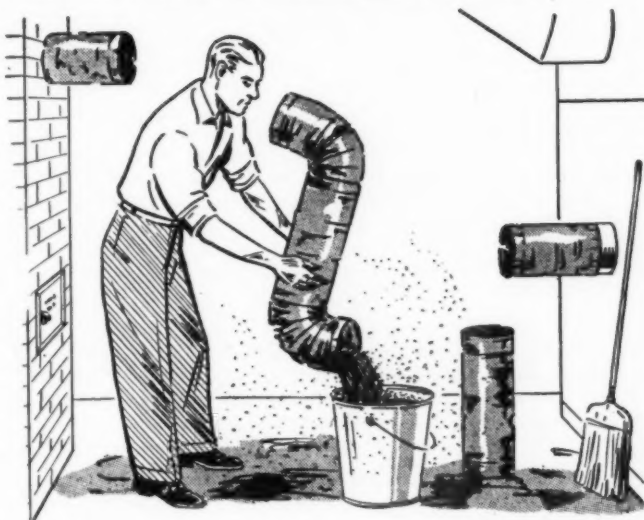


Listed by
Underwriters' Laboratories, Inc.
To Burn No. 3 Oil
(Diesel) or lighter



**Oil
BURNERS**

IS THIS NECESSARY?



VITROLINER BREECHING PIPE ELIMINATES THE EXPENSE AND BOTHER OF FREQUENT REPLACEMENT

VITROLINER is a new breeching pipe for connecting heating plant to chimney. VITROLINER BREECHING PIPE will give many years of trouble-free service. A complete line of fittings makes any hookup possible and can be easily and quickly installed. VITROLINER eliminates the fire hazard of corroded pipe. VITROLINER is made of heavy gauge steel completely coated inside and outside with porcelain to prevent corrosion. VITROLINER'S porcelain finish is attractive and adds to the beauty of any room.

SPECIAL FEATURES: The Telescope section is adjustable in length and is used to fill in any odd length now accommodated by standard lengths. The Vitroliner damper section has a cleanout hole covered with a sliding sleeve.

VITROLINER CHIMNEY LINER

VITROLINER is an acid resisting chimney lining which can be installed in existing chimneys, easily and quickly. VITROLINER prevents chimney deterioration caused by acids in the flue gases. VITROLINER will catch the acid condensate and drain it away with no harm to the brickwork.

VITROLINER has been used for the past 16 years and is proven thru a long field record.

VITROLINER chimney lining is heavy gauge steel, double coated inside and outside with acid resisting porcelain fused into the steel at 1575° F.

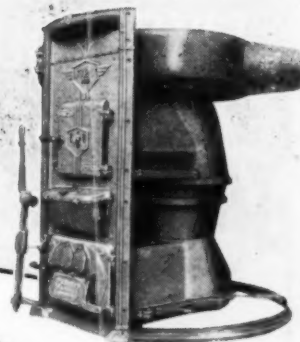
VITROLINER will correct DEFECTIVE LINING, SMOKE BACK, LEAKY BRICK JOINTS, and POOR DRAFT.

Write for further details and circular.

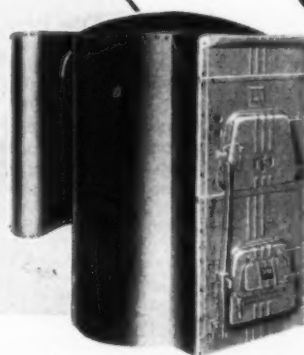
CONDENSATION ENGINEERING CORPORATION

122 So. Michigan Ave., Chicago 3, Ill.

G series cast iron furnace.
All parts assembled before
shipping. Extra-large one-
piece radiator. Ten year
guarantee, grates included



**Yes-
PREMIER
Is Accepting
Orders for
These Popular
Gravity
Furnaces**



SL series steel furnace.
Leak-proof riveted and
welded. Fire brick
lined.

That's right, your chances for getting Premier furnaces are better now than they have been for a long time. We're giving fairly good service today on these two furnaces, and in the months ahead, Premier expects to build up an even larger production.

Because of future uncertainties in securing materials, we cannot guarantee that we'll be able to supply all the Premier furnaces that the trade is going to demand. We are determined, however, to do all we can to fill our dealers' requirements.

Get in touch with Premier regarding these popular coal burning gravity furnaces. We'll be glad to tell you exactly what delivery you can expect on your order.

PREMIER FURNACE CO.
DOWAGIAC, MICHIGAN

PREMIER

THE YEAR 'ROUND LINE

LIKE YOUR PROFITS *HOT or COLD?*

With a Palmer Team
working the year round for you,
you can have both.



IN WINTER

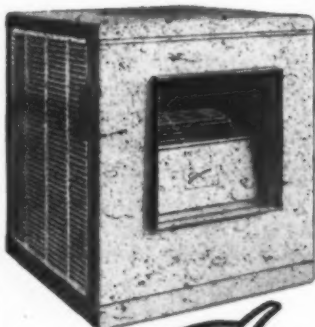
Palmaire SUSPENDED UNIT HEATER



The ideal heater for the store or small factory. Hangs from the ceiling and leaves valuable floor space clear. No duct work required. Fully automatic, with built-in features that pack a knockout selling punch. Just one of a complete line of high quality gas furnaces.

IN SUMMER

SNO-BREZE EVAPORATIVE COOLERS



Perfected in Arizona, the testing ground of air-conditioning, where coolers have to be efficient to sell. Backed by 30 years of manufacturing know-how. Complete line of blower and "air-stream" fan types are available.

Write
for
catalog

Palmer
MFG. CORP.
Phoenix, Arizona

With the Manufacturers

Minneapolis-Honeywell Regulator Co., 2726 Fourth Ave., S., Minneapolis, has opened a new office in Rochester, N. Y. Located in the Exchange Building, 16 State Street, the new office will be under the supervision of Stanley H. Perkins and will be responsible for sales and service of heating, ventilating and air conditioning controls in Livingston, Monroe, Steuben, Wayne, Yates, Seneca, Ontario, Schuyler and Chemung counties. Tioga County in Pennsylvania also will become part of the company's Rochester district.

Others on the new office staff are Harold Greene, Gerald C. Britton and Orville Kelly.

The C. R. Gelert Co., 35 N. Raymond Ave., Pasadena, Calif., engineers and manufacturers of Airjet ventilators and vent flue caps, has appointed the following wholesale distributors to handle their complete line.

McPherson Furnace Co., Seattle, Wash.—West Washington and Alaska.
Sullivan Valves & Engineering Co., Spokane, Wash.—East Washington, Idaho Panhandle and Montana.
Salt Lake Hardware Co., Salt Lake City—Utah and parts of adjacent states.
Western Steel Products, Denver—Colorado and New Mexico.
Moncrief-Lenoir Mfg. Co., Houston, Texas—Texas.
Central States Steel Co., Kansas City, Mo.—Oklahoma, Nebraska, West Missouri and Iowa.
Ceco Steel Products Co., Minneapolis—Southern Minnesota and Western Wisconsin.
Kelly-How Thompson, Duluth, Minn.—Northern Minnesota.

Announcement is made of the resignation of George M. Sheets, sales supervisor of the Iowa-Illinois Gas & Electric Company at Iowa City, Iowa, since the organization of the company. Mr. Sheets is leaving to take up his new duties with "Central Surveys," a market analysis and sales survey organization headed by Charles Parker of Shenandoah, Iowa, serving the gas and electric utilities of the United States and Canada.

While with the gas and electric utility industries, Mr. Sheets appeared as a speaker at various conventions and likewise contributed numerous articles to industry publications. He has served for several years as a member of the executive committee of the Missouri Valley Electric Association sales division, likewise serving as chairman of the sales division. He has also been state chairman of the refrigeration committee of the AGA.

Turco Products, Inc., 6136 South Central Avenue, Los Angeles 1, California, Chicago and Houston, manufacturers of cleaning and maintenance compounds, announces the recent affiliation of Donald Keating with their Technical Service Staff.

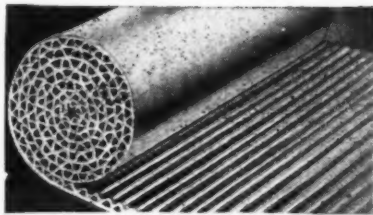
Mr. Keating served in the Navy as executive officer on an L.S.T. during World War II. He joins Turco as Technical Service Representative and will specialize in the solution of problems relative to cleaning and maintenance in the general industrial field.

Reader Wishes Catalogs

J. P. Kelly is opening a heating and air-conditioning shop in Hazelton, Idaho, handling furnaces, oil burners, electric water heaters, ventilating fans and blowers, and contracting sheet metal work. He would appreciate receiving catalogs, data and information from the trade.

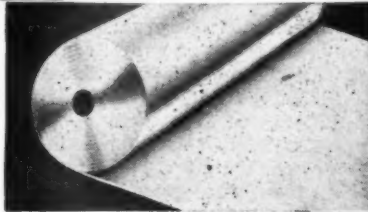
Sheet Metal Industries has been established in Muskegon, Michigan, by Donald and Albert Sironen, brothers and returned veterans. The concern occupies the main floor of a 2-story building at 51 E. Clay Avenue. The new firm is engaged in sheet metal work and the manufacture of paint spray and drying booths for local industries.

The brothers were engaged in sheet metal work for a number of years prior to the war. Glenn, another brother recently discharged from an army tank unit, is associated in the business.



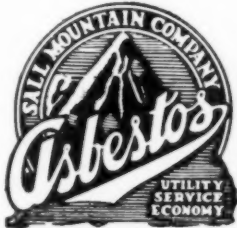
SAL-MO ASBESTOS AIRCELL PAPER

For insulating hot air pipe, gas ovens, range boilers and other surfaces exposed to heat. Protects surfaces from rust and corrosion.

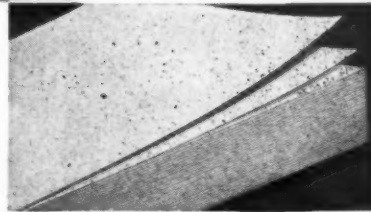


SAL-MO ASBESTOS PAPERS

Made in smooth, strong white sheets from the best grades of selected asbestos fibre. Specially processed to insure efficient insulation. In all standard weights and widths.



TANK JACKETS PIPE COVERINGS CEMENT AND OTHER ASBESTOS PRODUCTS

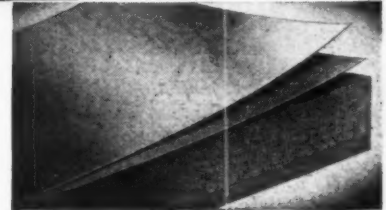


SAL-MO ASBESTOS MILLBOARD

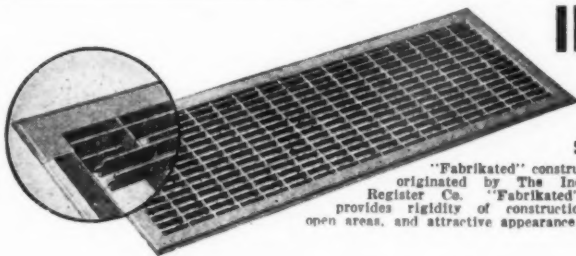
Fire and vermin proof, Sal-Mo Asbestos Millboard is not affected by age or dampness. For insulating stoves, ovens, electrical and heating appliances, protecting walls from heating apparatus. Standard size sheets; also cut to size.

SAL-MO No. 77 ASBESTOS DUCTBOARD

An Asbestos Product for constructing ducts in warm air heating, ventilating and air conditioning systems. Made of solid Asbestos. Light in weight; fireproof and moisture proof. Easily handled and applied. 33x48 sheets.



SALL MOUNTAIN COMPANY • ANDOVER 2414 • 176 W. ADAMS ST., CHICAGO 3, ILL.



Style
No. 132

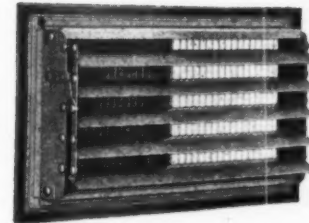
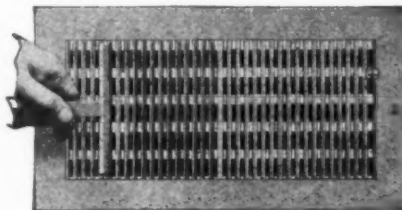
"Fabrikated" construction was originated by The Independent Register Co. "Fabrikated" design provides rigidity of construction, large open areas, and attractive appearance.

INDEPENDENT "FABRIKATED"

(Reg. U. S. Pat. Off.)

Registers • Grilles • Cold Air Faces •

...and wrought
steel registers
with flexible
grille bars...



No. 238 Horizontal Multiple Valves

Adjustable four-way direction of air flow. The vertical grille bars are formed from sheet metal and set at an angle of 30 degrees; $\frac{1}{2}$ to the right and $\frac{1}{2}$ to the left. The bars may be bent to direct the air flow to any other right or left angle or straight outward. Openings between bars, $\frac{1}{4}$ inch.



Always Leading
Always Progressing



THE INDEPENDENT REGISTER CO.

3747 EAST 93RD STREET, CLEVELAND, OHIO

With the Manufacturers

Viking Product and Sales Schools

The Viking Manufacturing Corporation has conducted a series of product and sales schools at their Cleveland offices during the first half of the year. Each school lasted for five full days, during which a thorough explanation of all of the firm's heating, cooling and year-around air conditioning equipment, and a complete study of application and installation, was conducted by Viking's engineering executives.

Those in attendance at the schools included officials,



engineers and members of the sales and service staffs of Viking distributors from all sections of the country, plus Viking district representatives.

Merchandising and policy sessions were presided over by H. S. Frasher, president, and Paul B. Patton, vice president, assisted by executives of the management and merchandising staffs.

The corporation's sales and general offices and research

laboratories are located at 1747 Chester Avenue, Cleveland 14, in a two story building recently purchased and completely modernized by Viking for the purpose.

Sturtevant Sales Engineering School

The B. F. Sturtevant Co. (now a Division of Westinghouse Electric) has resumed its sales engineering school. The company has been operating these schools for graduate engineers since 1934 and many of its key men are alumni. The students are taught the fundamentals of air handling and air conditioning and the application of equipment used in those fields. The present term started July 1 and the normal one year's course has been compressed into four months due to the urgent need for trained men in the field. The present students were selected from over one hundred applicants and are largely men who graduated between 1941 and 1943 and who served for two or more years as officers in the Army or Navy. Twenty-seven colleges are represented by the 35 students. No further applications are being considered at this time but applications for the next term, which will commence some time around February, 1947, will be considered in December, 1946. The school is held at the company's headquarters at Hyde Park, Mass.

PERSONNEL

Wheelco Instruments Company, 847 W. Harrison St., Chicago 7, has appointed Farnes and Martig, Inc., 417 N. E. Couch St., Portland 14, Oregon, as sales and service representatives for the State of Oregon.

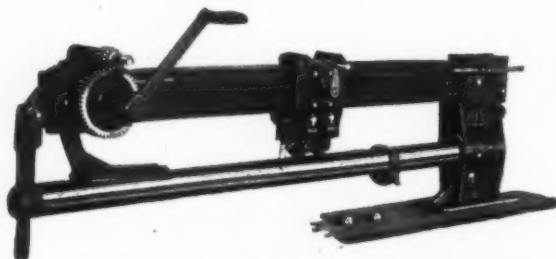
Fred G. Hoff, for a number of years manager of the Metropolitan Roofing Supplies Co., Inc., Bronx, N. Y., died recently at the age of 84. Mr. Hoff served about thirty years with Metropolitan, and prior to that was associated with the Barrett organization.

PEXTO

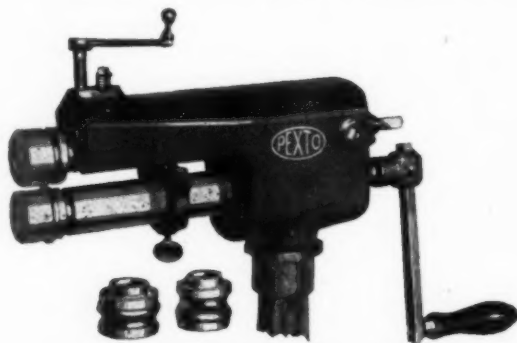
... the trade name
for EXCELLENCE in

SHEET METAL TOOLS AND MACHINERY

The two PEXTO Machines here shown are representative of the high standards of our complete line. They bear the trade mark so well known for excellence wherever Sheet Metal is fabricated . . . not alone in this country, but throughout the civilized world.



NO. 520 GROOVING MACHINE
20 GAUGE CAPACITY



NO. 620 BEADING MACHINE
24 GAUGE CAPACITY

THE PECK, STOW & WILCOX COMPANY - Since 1785 - SOUTHTON, CONNECTICUT, U. S. A.

TRIANGLE SHOCK ABSORBING PILLOW BLOCK

Designed by Triangle engineers for fans, blowers and other devices requiring silent operation, perfect alignment and self-lubrication.

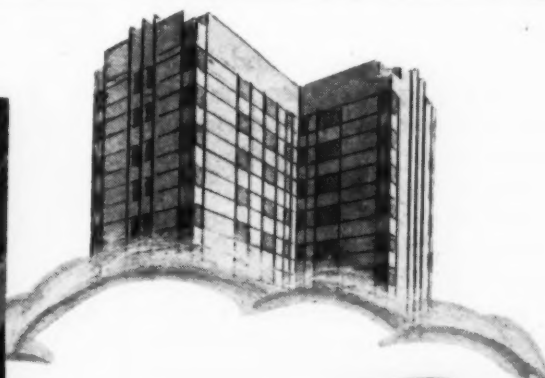
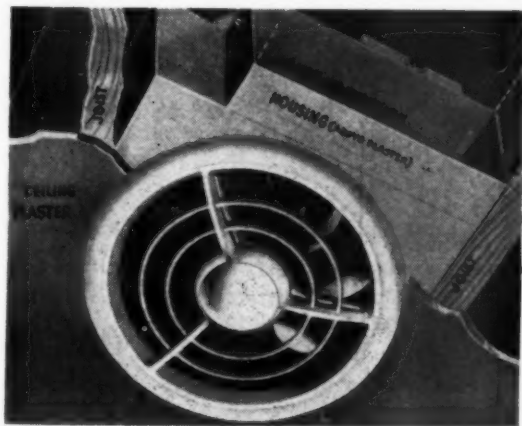
Preloaded oil-proof cushion built into the bearing. Ball-and-socket design. Write for samples and complete information.



TRIANGLE MANUFACTURING CO.

392 DIVISION STREET

OSHKOSH, WISCONSIN



CEILING *Blo-Fans* FOR G. I. APARTMENTS

MRS. G. I. wants her new apartment kept clean—free of cooking grease and odors. She wants ceiling ventilators that naturally capture unwanted air as it rises. The efficiency of Blo-Fan Ceiling Ventilator in drawing off steam, smoke and odors is so great that it soon saves enough in cleaning and redecorating costs to more than pay for the initial investment.

Ceiling installed, combining advantages of *both fan and blower*, Blo-Fans are twice as effective as ordinary sidewall ventilators of equal size. For Mrs. G. I. now—for an asset to easier leases in a future renters' market, install Blo-Fans.

Available Now —
Kitchen Size, Bath-
room Size, Rumpus
Room Size.

PRYNE & CO., INC.

LOS ANGELES 54, CALIFORNIA

BRANCHES : NEW YORK • CHICAGO • HOUSTON • SAN FRANCISCO

Getting Down to
Basic Principles on

Conversion BURNERS —



No. 324-B Barber Burner



No. 104-B
Barber Burner



The user of a gas conversion burner is interested principally in two things: performance, as seen in terms of heating adequacy and trouble-free operation — and economy, represented in the initial price of the equipment and its fuel efficiency. Based on this logical reasoning, a nation-wide preference for Barber Automatic Burners is easily understood.

To obtain the maximum delivered heat from the present warm air, steam, or hot water equipment, Barber units, round or square, are adjustable as to size, and tailor-made so that they correctly fit the existing furnace or boiler. Also, all Barber Burners produce the highest possible flame temperature (1900°) operating on natural atmospheric pressure, and concentrate a directed "scrubbing" flame application on the walls of the firebox, without diversion to intermediate refractory elements.

For a third of a century—in hundreds of thousands of homes and industries—Barber Burners have well proved their claim to superiority, and this for the realistic reasons stated above.

• Write for Catalog illustrating and listing many types of Burners for Appliances, Gas Conversion Burners for Furnaces and Boilers, Regulators, etc.

THE BARBER GAS BURNER COMPANY

3704 Superior Avenue

Cleveland 14, Ohio

BARBER BURNERS

With the Manufacturers

Allegheny-Ludlum Re-locates Offices

The Allegheny Ludlum Steel Corporation announces the re-location of its executive offices in the Henry W. Oliver Building, Pittsburgh 22, effective July 16, 1946.

Distributor Wishes Literature, Prices

John T. Rice of Eastern States Supply Company, 127 Troutman Street, Brooklyn 6, has returned from service and in order to re-establish his sources of supply is asking manufacturers of roofing and air conditioning equipment and supplies to forward literature and wholesale prices, and to place his name on their active mailing list.

Peerless Foundry Rebuilt

The plant of the Peerless Foundry Company, Inc., of Indianapolis, razed by fire last year, has been completely rebuilt and production resumed on an increased scale.

A number of operating improvements in the Peerless sheet metal department are enabling the company to boost production of Peerless warm air furnaces, in addition to providing a complete stock of furnace repair parts.

In the rebuilt sheet metal shop these improvements are permitting more efficient handling of fabricated materials as well as flat sheets. With the installation of



a new traveling crane and hoist, it is now possible to unload metal in lifts of several tons each, rather than in single sheets.

All machinery has been regrouped and departmentalized, so that machines producing a certain type of fitting are for the most part located within easy reach of each other.

In addition, the sheet metal working machines have been completely rehabilitated and individually motorized. Several new presses, press brakes and dies have been added.

The Peerless company was organized almost half a century ago, on June 16, 1900. From a small beginning, it has grown into a major manufacturing concern with distribution of its products throughout the Central States. The fire which swept the Peerless plant and office on February 21, 1945, necessitated shut-downs in most departments and caused damage estimated at \$200,000. —Frank W. Mutz, president.

The White Mfg. Co., 2362 University Ave., St. Paul, has appointed Walter A. Juergens as their representative in Cincinnati office at 802 Times-Star Tower.

FRONT RANK

GRAVITY FURNACES

Combine these

8

Advantages.



They're the Line to SELL!

- 1 LOWER GRATE LEVEL—Better for Stokers.
- 2 LOWER FEED DOOR—Easier to hand-fire.
- 3 LONGER DISTANCE ABOVE FEED POUCH—for Greater Radiation.
- 4 RE-DESIGNED DUPLEX GRATES—Easier to install.
- 5 RE-DESIGNED FRONT—Fits either square or round units.
- 6 ALL SHIELDED ARC WELDED CONSTRUCTION.
- 7 BOILER PLATE STEEL, No. 7 GAUGE HEAD—No. 8 body.
- 8 CAST IRON RADIATOR COLLAR, TONGUE & GROOVE CONNECTION.



The FRONT RANK coal fired furnaces, for hand or stoker firing, meet all demands for heavy duty and economy. They're easy to install, have high B.T.U. rating and give years of trouble-free service. With improvements mentioned above, this SERIES remains the backbone of our production and are the post-war models for leadership—and profits.

ORDER from YOUR JOBBER.

FRONT RANK FURNACE CO.
DIVISION OF LIBERTY FOUNDRY CO.
2500 OHIO AVE., ST. LOUIS 4, MO.

Auer

HEAT-RITE

REGISTERS

for Gravity

Compare this smart modern design with registers costing more money—and you see the reason for its popularity. One of the best selling models ever produced by Auer, it embodies high efficiency and fine appearance in a warm air register. It has generous open area, and bendable fins for upward, level or downward direction. This is a two-piece design with removable face, and makes an easy, neat, tight installation. Equipped with Auer exclusive patented spring tension deflector adjustment, permanently non-slipping and positive. This streamlined register is available in types for baseboard or wall position, and also for intakes.

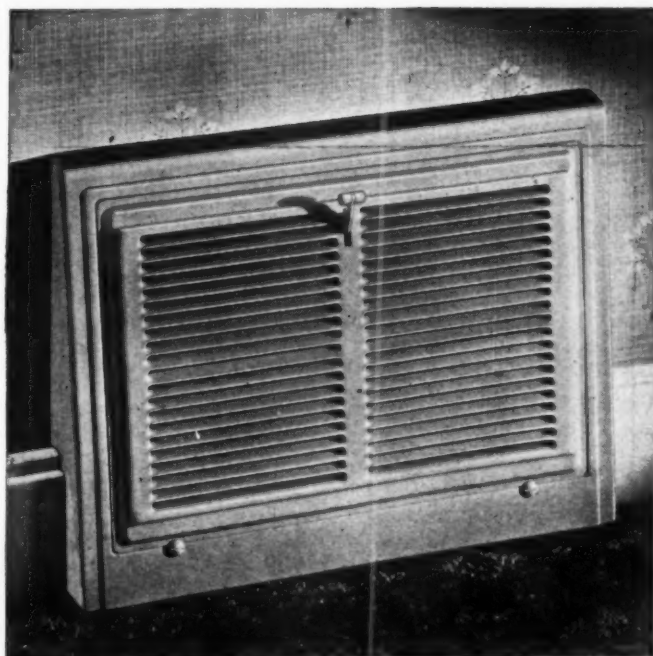
You will find that the Heat-Rite, though moderate in cost is suitable for your GOOD jobs, because it is a well made, substantial, nicely finished product.

Ask for Auer Register Book showing all models for air conditioning and warm air. Special Grille Catalog also sent on request.

THE AUER REGISTER CO.

3608 Payne Ave.

CLEVELAND 14, OHIO



News Summary Of the Month

(Continued from Page 60)

More HH Products

METAL doors and frames, metal window sash and frames, metal plaster base (metal lath), boilers (low-pressure—residential heating types), furnaces (floor, wall), and registers and grilles (for heating systems), have been added to the list of items for which builders may obtain HH preference ratings to assist procurement for the Veterans' Emergency Housing Program, the CPA and the NHA announced August 7.

CPA action was taken by amending Schedule A and Direction 11 to Priorities Regulation 33.

No Strikes in Housing

WORK stoppages affecting construction of homes are at the lowest point since the beginning of the Veterans Emergency Housing Program. Latest figures compiled by the Labor Branch of the National Housing Agency, on the basis of reports by the Department of Labor's Conciliation Service, show that there is not a single strike of major significance to the home-building program among building crafts anywhere in the country.

Among off-site labor—that is, among workers producing building materials—there are only about 16,850 men involved in work stoppages of any kind. This figure includes disputes in plants which ordinarily produce materials not utilized in the housing program, as well as materials for residential construction. With well over a million workers employed both on-site and off-site in the home-building industry, the figure 16,850 on strike represents slightly over 1 per cent of the total.

CC Ratings Restored

RESTORATION of the CC preference rating system on iron castings and steel, suspended at the time of the steel strike, is announced by CPA. Manufacturers are now eligible to get CC ratings which will speed their procurement of sufficient quantities of iron castings and steel to maintain a minimum economic operation.

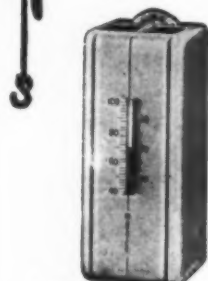
With steel ingot output approaching a 90 per cent capacity rate, it is expected that finished steel fabrication in the fourth quarter may reach normal, or between 13.5 and 14 million tons. This, coupled with the anticipation of an improved rate of production of iron castings in that quarter, makes it possible to return to the system of CC ratings on these materials for delivery after September 30.

The action was taken by amendment of Priorities Regulation 28, effective August 7. Application for such ratings may be made immediately to the CPA on Form CPA 541-A.

In addition, CPA announced that special provision



B-22 Motor



A-23 Plain Thermostat



D-22 A Regulator Switch

MASTER TEMPERATURE CONTROLS

For over a quarter of a century, "White" has been a distinguished name in the heating industry. Master Temperature Controls are famous for their greater comfort, more efficient service and longer life . . . factors which insure complete satisfaction for your customers and growing sales for you.

*Don't overlook WHITE . . . it's
not only a name; it's a guarantee*

WHITE MFG. COMPANY

2368 UNIVERSITY AVENUE
ST. PAUL - MINNESOTA

IF YOU WANT *Action* ..

NOT JUST CONVERSATION..WE'LL SEND OR BRING YOU FULL DETAILS OF THE PLAN!



Wayne packaged Home Equipment is essential to modern living. Not luxury items, but basic requirements for all homes.

All standard units are easily installed without trick "gadgets." You can rely on Wayne "common sense" Home Equipment for more sales and fewer service calls.

A FULL LINE OF INSTALLED HOME EQUIPMENT

Write for details of the "Partnership Plan." Wayne's complete, packaged selling program has what it takes to get and keep a profitable volume of equipment business.

More NET profit because Wayne supplies the material and helps you with your sales programs.

● FOR A SOUND BUSINESS FUTURE

WAYNE'S FACTORY-GUIDED SALES PROGRAM IS A PACKAGED UNIT OF SALES AND PROFIT PRODUCING HELPS.

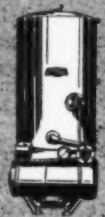
Full Line Dealerships are Still Open



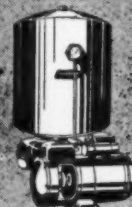
THERMATIC OIL BURNERS



WINTER AIR CONDITIONERS



DEEP WELL JET SYSTEMS



SHALLOW WELL SYSTEMS



OIL, GAS AND ELECTRIC HEATERS



SOFT-LUX WATER SOFTENERS

WAYNE HOME EQUIPMENT CO., INC. - 801 GLASGOW, FT. WAYNE, IND.

(Formerly Wayne Oil Burner Company)

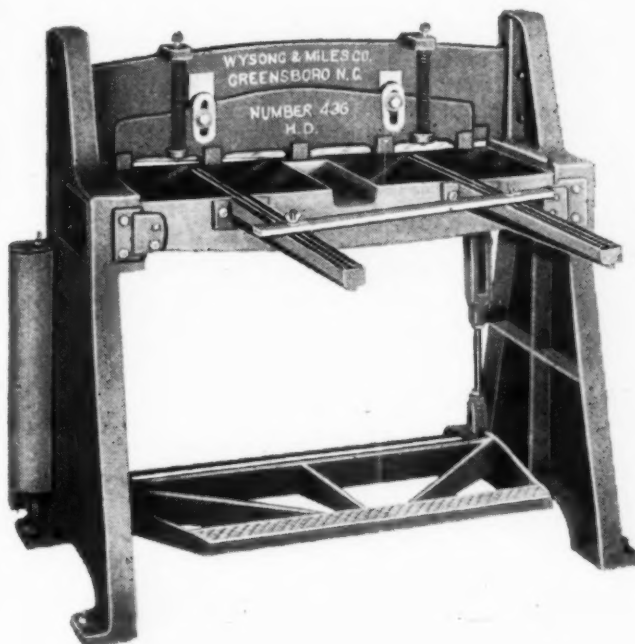
for EASE in SHEARING

The rugged and powerful heavy-duty foot power shear. Its clean lines and ease of operation give high standards of performance.

Made in four sizes... No. 436-36", No. 442-42", No. 448-48" and No. 452-52" ... 16 gauge capacity.

Designed for accuracy... no twist, spring or deflection... no creeping or marring of sheets. New type semi-steel treadle. Back gauges are of rack and pinion type... A WYSONG and MILES Product.

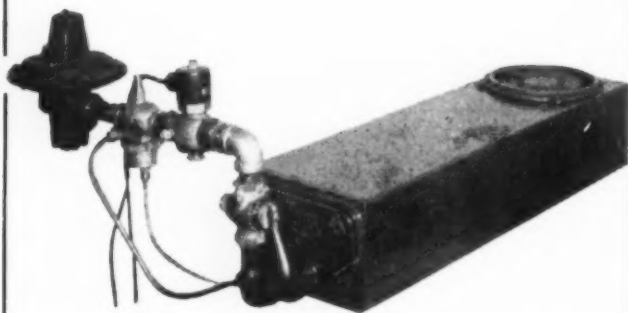
Write for detailed illustrated folder.



WYSONG and MILES CO.
GREENSBORO, NORTH CAROLINA



ONE-STOP BURNER SERVICE



One of the Major Industrial Burner Manufacturers of the world offers to design and manufacture a special adaptation of this John Zink Conversion Burner for your particular boilers and furnaces enabling you to furnish complete gas-fired units.

JOHN ZINK PRODUCTS
ARE PROTECTED BY
U. S. LETTERS OF PATENT

"There's A John Zink Burner for
Every Heating & Power Need"

John Zink Company

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TULSA, OKLAHOMA

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has been made for assigning CC ratings for iron castings and steel to make certain items needed in the veterans' housing program and to increase production in the fourth quarter.

To take care of fourth quarter requirements, CPA has issued direction No. 18 to PR 28, which permits the granting of CC preference ratings for iron castings and steel for manufacture in that quarter of the following items, in types suitable for low-cost housing: Furnaces, warm air, including floor and wall furnaces; furnace pipe, fittings and duct work; registers and grilles for heating systems.

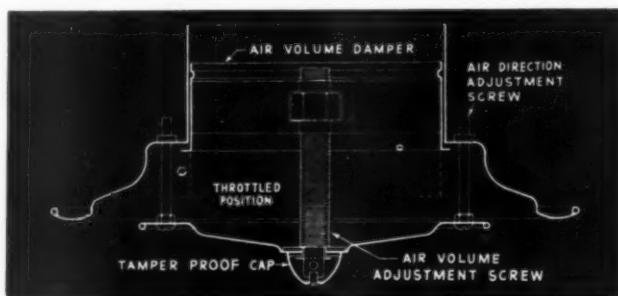
Separate application should be made to the Civilian Production Administration, on Form CPA-4491, on or before August 15, 1946, for a CC ratings for deliveries after Sept. 30 of each product or product group listed above. Application form CPA-4491 may be secured from the Civilian Production Administration, Social Security Building, Washington 25, D. C., or from any of the 71 CPA Field Construction offices.

Producers of the listed housing items may apply for only the amounts of iron castings and steel actually to be put into process during the fourth quarter. CC ratings for these items will not normally be assigned to increase inventories.

Washington Gossip

IT IS reported in Washington that steel and sheet aluminum is to be made available to small companies shortly through the RFC, which will buy supplies from War Assets Corp. for resale in less than carload lots. Procedure will not be known until the plan is announced.

Tin, says Washington, will continue to be scarce



Pat. & Pat. Pending

**All the advantages of draftless air diffusion
... plus FAST SYSTEM BALANCING
AIR PATTERN CONTROL**

because Kno-Draft Air Diffusers are adjustable

Volume Damper for fast system balancing regulates the air outlet aperture uniformly without affecting the outlet velocity or diffusion pattern.

Air Direction Adjustment affords any angle of air discharge from vertical to horizontal to accommodate ceiling height, individual, seasonal, or air pattern requirements.

Specify Kno-Draft Diffusers for

better mixing control of room and supply air, more uniform temperatures throughout the occupied zone and noiseless, draftless air distribution.

Send for FREE handbook containing sketches, charts, dimension prints and instructive text that simplify the selection and installation of air diffusers. For your copy, please write Dept. J-1 using your company letterhead.

W. B. CONNOR ENGINEERING CORP.

AIR DIFFUSION

AIR PURIFICATION

AIR RECOVERY

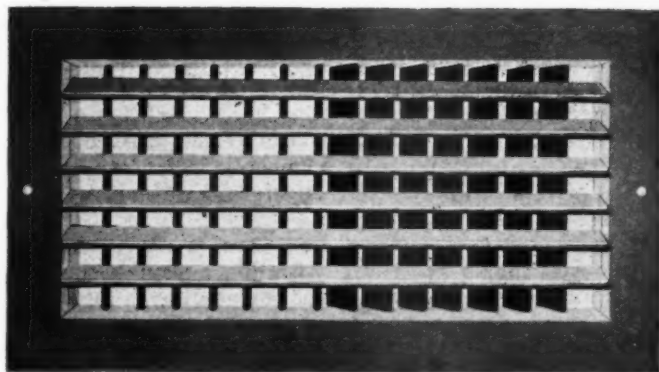
112 East 32nd Street



New York 16, N. Y.

IN CANADA: Douglas Engineering Co., Ltd., 1405 Bishop St., Montreal 25, P. Q.

GRILLES REGISTERS HIGH VELOCITY OUTLETS



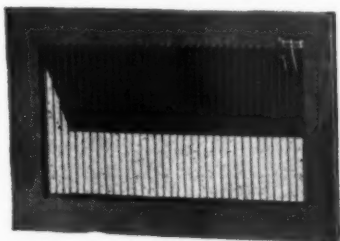
HIGH VELOCITY OUTLET

Adjusted for Down Throw and to One Side

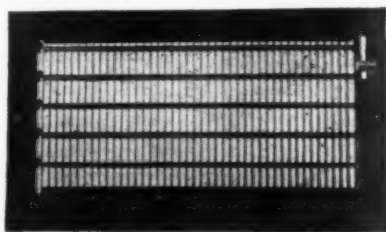
Style "DDH" illustrated above is one of eight variations of our Deep bar, high-velocity outlet—each bar individually adjustable with key furnished—with or without volume valves. Supplied with baked prime and sponge rubber gasket.

This is a heavy, attractive outlet made in all sizes, with matching fixed-bar down-deflecting return grille. Prices are competitive.

Prompt shipment of this line is available.



Style 71—Register—Wall or Baseboard. Single damper, attractive and low-priced. Complete with rubber gasket, screw holes, prime coat, and key for right-left adjustment of individual blades.

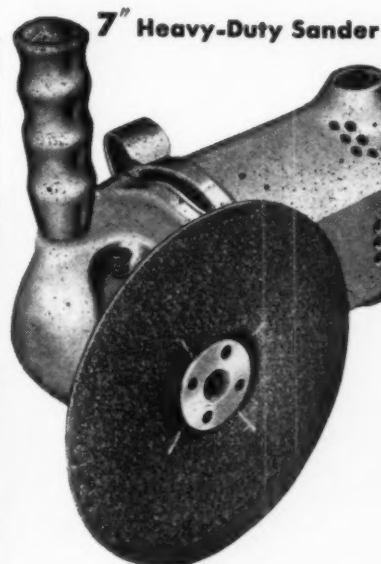


Style 74—Register—Wall or Baseboard. This Register utilizes 1" multiple-dampers to control volume and vertical direction. Multiple dampers may be set so as to obtain up, straight, or down deflection, as well as complete shut-off. The face is the same as all others of the "70" line—permitting air reflection right or left by adjusting front blades with key furnished. Blades are 1/4" center to center, and 1/4" in depth. Complete with rubber gasket, screw holes, prime coat. This is an attractive, well-constructed register, available promptly.

For immediate quotation and literature, wire, write or
Telephone your inquiry to Bloomfield 2-2345

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INCORPORATED
BLOOMFIELD, N. J.

AMERICAN ARTISAN, August, 1946



This One POWER TOOL Does All..

A Black & Decker Portable Electric Sander drives many attachments . . . does many fabrication and installation jobs . . . on all types of heating, piping and air conditioning work. Available attachments include:

WIRE CUP BRUSHES for removing rust, old paint, scale, light weld spatter, oxidation, grease or tar.

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ROTARY PLANNER HEADS for shaping and semi-finishing lumber—jobs formerly done with jack plane and adz.

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Sands any Surface



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PORTABLE ELECTRIC TOOLS



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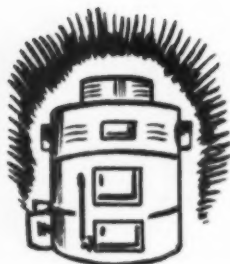
BENCH GRINDERS



WIRE BRUSHES

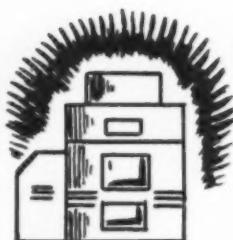
THARCO

*the FURNACE CEMENT that
has met all the tests of
SERVICE.*



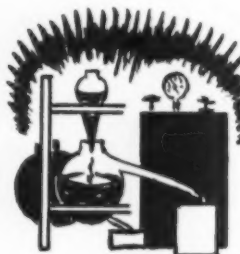
IN NEW FURNACES

Leading furnace manufacturers use Tharco Asbestos Furnace Cement because they recognize that here is leader's quality based upon long experience with all furnace operating requirements.



IN REPAIR JOBS

Furnace dealers who do quality repair work will not compromise on the important matter of furnace cement. That's why Tharco is the choice of furnace dealers who know their business!



IN LABORATORY TESTS, TOO!

Tharco meets every test of service because in Armstrong Laboratories there is ceaseless testing and research that keeps continually apace of furnace installation, operation and repair problems. Use Tharco Furnace Cement always.



for the next 12 to 18 months despite pending agreements for purchase of Bolivian and far eastern ore.

Employers who have been chiseling on veterans' training program by paying substandard wages or taking "kick-backs," etc., and letting government make up the difference by GI payments may expect to be "cracked down on" by government through an investigation which has been under way for several months and is now about to be taken into court. Phony "on the job" training programs have also been under investigation.

The first wave of price boosts (some affecting our industry were reported previously) will come to an end within a few weeks. After this wave it is said there will be few boosts. Under new OPA regulations, manufacturers' prices will be subject to slow, complex and red tapish procedure with the hope that manufacturers will get discouraged and decide to let present prices stand.

Wage boosts of 10 to 12 per cent are expected in 1947. Some price increases will follow these boosts, but Washington expects considerable complaint and trouble next year.

Copper for Housing

CIVILIAN Production Administration says it is ready to recommend, if necessary, the use of the government's remaining stockpile of copper to aid the veterans emergency housing program. During mine strikes, government-owned copper stocks were drawn down to 300,000 tons at the end of June from around 500,000 at the start of the year. Much is fire refined copper, rated as unsuitable for many uses.

WHITNEY LEVER PUNCHES

No. 4B PUNCH



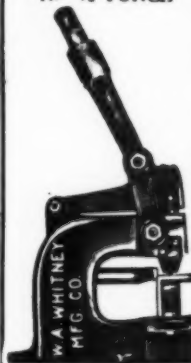
Length—8 1/4 inches. Capacity—1/4-inch through 16 gauge. Deep Throat—2 inches. Weight—3 pounds. Punches and Dies—1/16" to 9/32" by 64ths.

No. 6 PUNCH



Length—26 1/4 inches. Capacity—1/4-inch hole through 9/16-inch iron; especially adapted for button punching or temp-lat work. Punches and Dies—1/4" to 9/32" by 32nds.

No. 91 PUNCH



CAPACITY
1/4-inch hole through 1/4-inch iron; 1/2-inch hole through 3/16 inch iron. 2-inch hole through 1/4 inch iron. Depth throat, 5 inches. Weight, 82 lbs.

We have tools for every purpose needed by Sheet Metal Contractors. Ask your Jobber

No. 1 PUNCH



Length—34 inches. Capacity—1/4-inch hole through 1/4-inch iron. Punches and dies in sizes from 1/4 to 9/16 by 64ths.

No. 2 PUNCH



Length—25 inches. Capacity—5/16-inch hole through 1/4-inch iron. Punches and dies in sizes 3/32" to 1/4-inch by 64ths.

CHANNEL IRON PUNCH



Companion to No. 2 Punch. Every part of the two Punches interchangeable, including punches and dies. Capacity—1/4-inch hole through 1/4-inch iron.

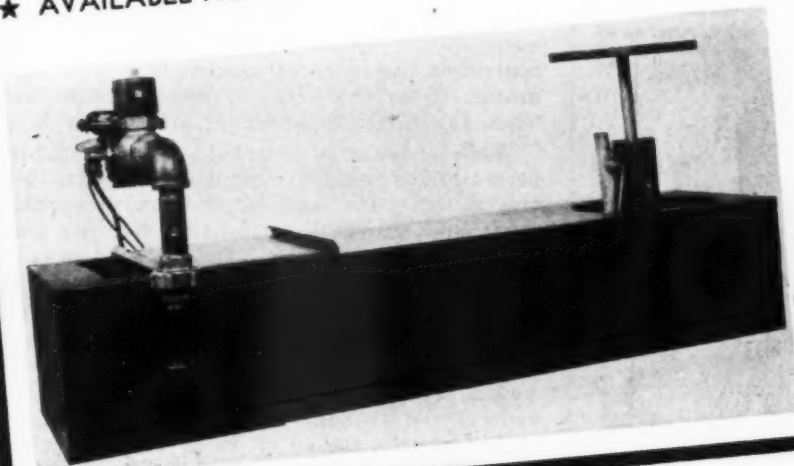


WHITNEY MFG. CO.
636 RACE ST. ROCKFORD, ILL.

The WRIGLEY BURNER . . .

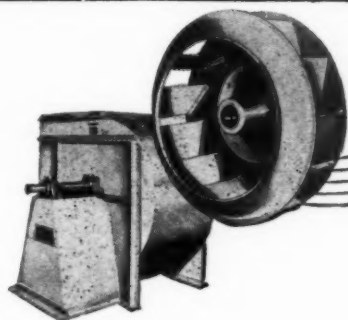
- ★ COMPLETE SAFETY CONTROLS
- ★ EASY TO INSTALL
- ★ ECONOMICAL TO OPERATE
- ★ AVAILABLE NOW!

- ★ ATTRACTIVE DEALER OFFER
- ★ FITS MOST HOT AIR, STEAM AND HOT WATER SYSTEMS
- ★ BURNS UP TO 160,000 B.t.u. PER HOUR



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316 1/2 W. Michigan Ave.
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MASSACHUSETTS

POWER FIXED FANS
DESIGN 4

• AIR CONDITIONING •
HEATING & VENTILATING
• INDUSTRIAL •

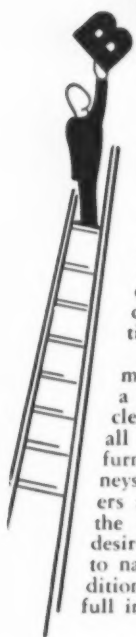
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Bulletin 101
Catalog



MASSACHUSETTS BLOWER DIVISION

The BISHOP & BABCOCK Mfg. Co.
4901 HAMILTON AVENUE CLEVELAND 14, OHIO

BOOST PROFITS



Save VITAL FUEL

You can earn extra profits with a Grand Rapids Furnace Cleaner — and help save precious fuels, now more scarce than ever. Merchandising through your service department is the answer, for it not only enables you to sell new equipment while you clean but also keeps your customers' furnaces in the tip-top repair so essential to economical operation.

Built to give you dependable, efficient service for many years, the Grand Rapids Furnace Cleaner does a complete, thorough cleaning job, removing all dirt and dust from furnaces, boilers, chimneys, stokers, oil burners and heaters — even the entire basement if desired. It's sudden death to nasty "plug up" conditions. Write today for full information.

**GRAND RAPIDS
FURNACE CLEANER**
MODEL OF The Doyle VAC-11



DOYLE VACUUM CLEANER CO., 227 Stevens St., S. W., Grand Rapids 7, Mich.

ABC's of Combustion

(Continued from Page 65)

breeching and chimney and thus to reduce the available draft. Also, by reducing the temperature of the gas in the chimney, the available draft is further reduced. It also compensates for effects of changes in wind velocity and barometric pressure, which affect draft intensity.

In plants equipped with small stokers or dampers controlled by thermostats or similar means, operating on the "on and off" principle, the range of control is sometimes increased by the addition of a motorized control on the balanced damper which, by mechanical means, opens the butterfly damper more completely when the stoker or underfire air damper is shut off.

While a device of this kind does not eliminate the necessity for manual control of dampers, it is effective in offsetting some of the conditions that affect draft and assists in stabilizing burning conditions.

This method of draft control is subject to criticism on two counts: 1) there is a loss of heat from the heating system due to waste of warm air from the furnace room. Fuel is burned to heat this air from the outdoor temperature to the temperature of the furnace room and, 2) admission of air tends to cool the chimney and reduces the available draft when the automatic control starts the stoker or opens the damper supplying air to the fire. However, in most cases the losses are more than offset by the gain in combustion efficiency and there is a net gain.

Aluminum

Lighter for faster, easier installation, Char-Gale prefabricated aluminum ducts and fittings save time . . .

save freight . . . save tedious shop-production time.

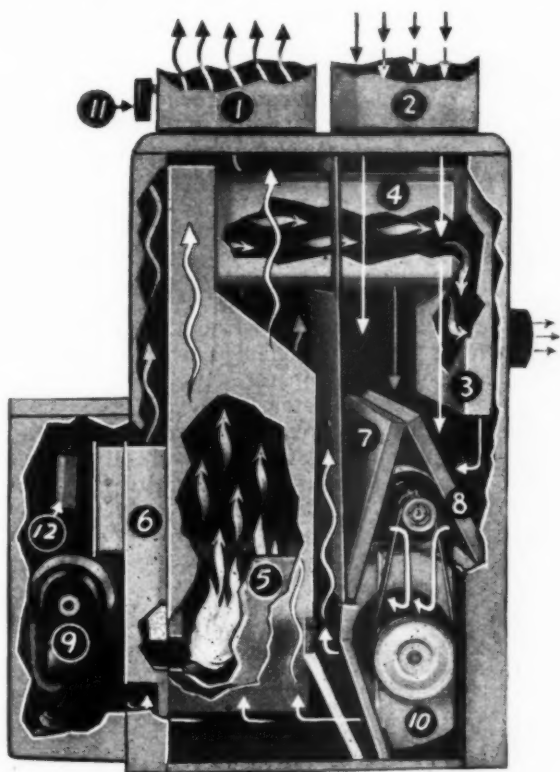
Sections are ready-formed, fit together neatly and speedily. More jobs, less work, more profit. Distributed by heating jobbers.

PREFABRICATED
DUCTS AND FITTINGS
FOR WARM AIR
HEATING

CHAR-GALE

CHAR-GALE MFG. CO. MINNEAPOLIS 6, MINNESOTA

SUN FUEL-MASTER

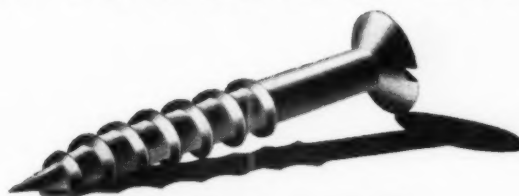


OIL FURNACES

SUN Automatic Oil Furnaces are now available in limited volume. Re-designed, better than ever . . . sizes 100 - 135 - 165 - 200 thousand B.t.u. per hr.

**J.V. PATTEN
COMPANY**
MANUFACTURERS—ENGINEERS
SYCAMORE, ILLINOIS

AN UNCOMMON RIVET



REPLACES THE COMMON SCREW

... in answer to the age-old cry for a better fastener

CHERRY plus **MONEL** equals a new Cherry Blind Rivet for specialized service. Cherry means tight, neat blind rivets . . . while Monel means resistance to corrosion. This combination of virtues is being applied to the manufacture of stainless steel railway cars, where the Cherry Monel Rivet is being used in several interesting applications.

CAR FLOORS are laminated wood on stainless steel. How to fasten wood to steel? Screws have been used, but screws work loose. Riveting is logical, but ordinary riveting requires two men and means difficult access problems. Hence the use of tight, neat Cherry Blind Rivets, installed with an easy, controlled pull from one side of the work.

LIKEWISE, Cherry Blind Rivets provide a secure and permanent method for anchoring exterior and interior trim as well as interior sheathing. A unique war-born fastener carves itself another niche by doing the job better and faster.

THE CHERRY MONEL RIVET is available in all standard types, head styles, diameters and lengths. Cherry Blind Rivets are also available in aluminum, steel and brass.

SPECIAL CHARACTERISTICS establish Cherry superiority over other blind fasteners: (a) Greater shank expansion (b) Greater allowable variance in material thickness for a given grip-length.



Get this Cherry Handbook D-45 to find out all about Cherry Blind Rivets and their many applications. Write to Dept. A-200, Cherry Rivet Company, 231 Winston Street, Los Angeles 13, California.

CHERRY RIVETS, THEIR MANUFACTURE & APPLICATION ARE COVERED BY U. S. PATENTS ISSUED & PENDING

**Cherry Rivet
Company**
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**HERE'S THE PORTABLE SAW
THAT SAVES TIME AND
LABOR ON CUT-OFF JOBS**

... a handy tool for you



Wells No. 8

All around the plant you'll see them—stock room, tool room, machine shop, maintenance dept.—wherever there is cutting to be done. Write for bulletin—or ask for a representative to call and give you the details on the low-cost Wells.

Specifications:

CAPACITY: Rectangular 8" x 16"
(Special Guides) 5" x 24"
ROUNDS: 8" Diameter
MOTOR: 1/2 H.P., A.C. or D.C.
SPEEDS: Selective 60, 90, 130 feet per minute
WEIGHT: Approximately 665 pounds



Products by Wells are Practical ☺
**METAL CUTTING
BAND SAWS**
WELLS MANUFACTURING CORPORATION
1819 WILSON AVE., THREE RIVERS, MICHIGAN

Oil Burner Course

(Continued from Page 67)

granted one has the practical experience but no teaching experience the officials of the department often can train successful applicants to become good teachers without too much trouble if they have aptitude and good background.

In that courses of study discussed dovetail rather well, often instructors teach more than one subject if and, when necessary to cover classes. They work with oil heating laboratory equipment in itself valued at \$40,000 not counting tools, practically all donated or loaned by the oil heating and air conditioning industry. At present there are available in these subjects four full-time and eight part-time instructors, besides the principal.

Catalytic Fuel Oil

(Continued from Page 70)

catalytic fuel in question without a trace of smoke and without any objectionable carbon formation over a prolonged period of operation.

Increasing the diameter of the fan, thus affording higher velocity air giving greater turbulence and more intimate mixing of the air and oil in the early stages of combustion, was also found to give a marked improvement in the performance of vertical rotary burners on catalytic fuels.

In both cases, these were relatively simple changes but they were sufficient to bring the burning conditions in line with the fuel requirements, just as retarding the spark timing in your automobile engine

PERFORMANCE PLUS!
ATH-A-NOR
Furnaces and Parts

★ ★ ★

Performance is the yardstick for measuring the efficiency of any heating plant, and those that will operate year after year with little or no attention are the ones which will return you the most profit.

You're sure of top drawer performance when you install ATH-A-NOR Furnaces and parts exclusively. Over fifty years of furnace manufacturing experience guarantee you home heating plants with performance ratings and lasting qualities to satisfy the most critical clients. Investigate now . . . write for literature.

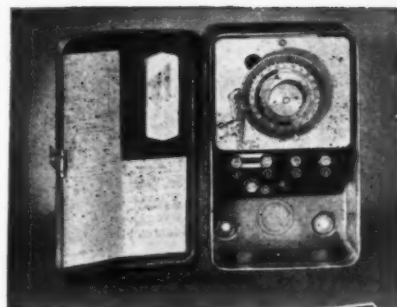
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*Manufacturers of Quality Heating Equipment
for Over Fifty Years.*

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THERE'S A THERMO-DROP HUMIDIFIER



The "TOP" VALUE in TIME SWITCHES

Telechron MOTORED

OPERATING ADVANTAGES

- 1 Self-starting synchronous operation.
- 2 Complete self-oiling lubrication by patented capillary oiling system.
- 3 Years of continuous, uninterrupted operation.
- 4 Practically instantaneous self-starting at full rated load ... and other advantages.

Paragon
300 SERIES
Now \$10⁷⁵ List

Has a ten year record of success.

Widely

known as a precision top-quality ON and OFF time switch. Ideal for timing stokers, oil burners, pumps, valves, refrigerators, attic fans, blowers, etc.

Includes a combination of the most advanced engineering features. Telechron motored.

PARAGON ELECTRIC COMPANY
1608 Twelfth St., Two Rivers, Wisconsin

Paragon *Two Rivers*
WISCONSIN
BUILDERS OF ELECTRICAL EQUIPMENT SINCE 1905

YOUR CUSTOMERS WANT *Healthful Comfort*

THERMO-DRIp
HEAT REGULATED
HUMIDIFIERS



Always Provide It!

Thermo-Drip Humidifiers moisten air as it is heated, in direct proportion to temperature. Thermo-Drip Humidifiers regulate water feed and control the amount of evaporation. Thermo-Drip Humidifiers are manufactured from the finest materials and are designed and engineered to simplify your installation and insure complete satisfaction to your customers. Get all the facts on Thermo-Drip Humidifiers now. Install them on any type or make of furnace for correctly balanced humidification and healthful comfort. Write us today.

Automatic HUMIDIFIER CO.
CEDAR FALLS IOWA

FOR EVERY TYPE OR MAKE OF WARM AIR FURNACE

Let's All "Hold the Line" on Prices

PEERLESS has no intention of taking advantage of opportunities for raising prices . . . will confine its increases to those granted by OPA or those which may be made necessary by higher material costs.

PEERLESS believes this is the only way the return of government regulation can be prevented and the nation restored to a sound economy. That's why we're "holding the line" and are hoping that you'll do likewise.

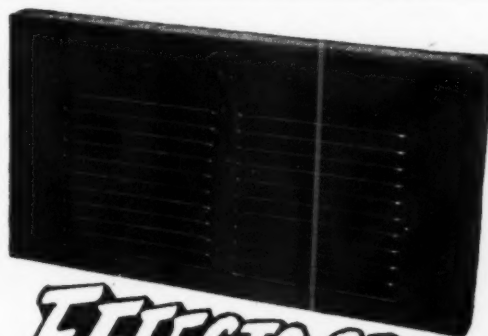
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Parts Catalog.

PEERLESS FOUNDRY COMPANY

Manufacturers of Peerless Warm Air Furnaces, Fittings and Repair Parts for All Makes of Furnaces and Boilers

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EFFECTO-GRILLE

FORCED AIR
REGISTERS and GRILLES
Priced with the Lowest

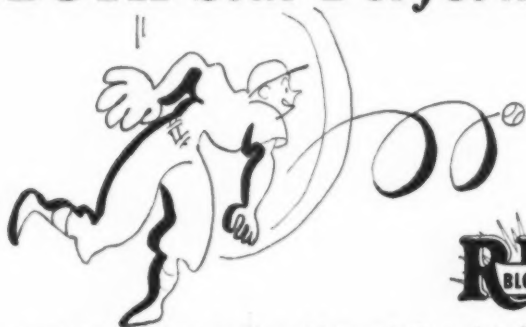
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Prompt attention to all inquiries.

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DETROIT 27, MICH.

BOTH Star Performers



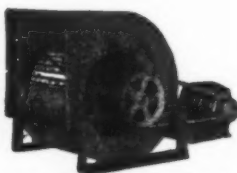
**REX
BLOWERS**

A great hurler excels on the diamond because he has such a wide variety of pitches—a repertoire that enables him to really bear down on any type of batter.

Rex Blowers excel in the field of heating and ventilating because they are available in such a broad range of sizes—a range that permits selection of a unit that most efficiently meets any air-moving requirement.

Not five, not ten—but TWENTY-TWO delivery rates, from 400 C.F.M. to 32,000 C.F.M. are offered by this really complete line! All units are designed by field trained engineers and sturdily constructed to insure user-satisfaction with their quiet operation and trouble-free service.

For heating and ventilating installations that consistently win and maintain harmonious customer-relations, profit-minded dealers choose Rex Blowers.



It will pay you to review the advantages of using Rex Blowers on future jobs. Send for Bulletin No. 222 for complete information.



2310 Superior Avenue

Cleveland 14, Ohio

LINE UP NOW WITH ECON-O-COL STOKERS



... to cash-in on the huge backlog of stoker sales! You increase your profits through faster sales, make fewer service calls by selling ECON-O-COL's complete line of precision-built, highest quality stokers. And a hard-hitting promotional program backs you up every step of the way! Details of our exclusive dealer franchise, now available in several areas, await your inquiry. Write or wire us today.



is effective in suppressing the tendency of gasoline to knock or "ping." In fact, the two phenomena are closely related in many respects.

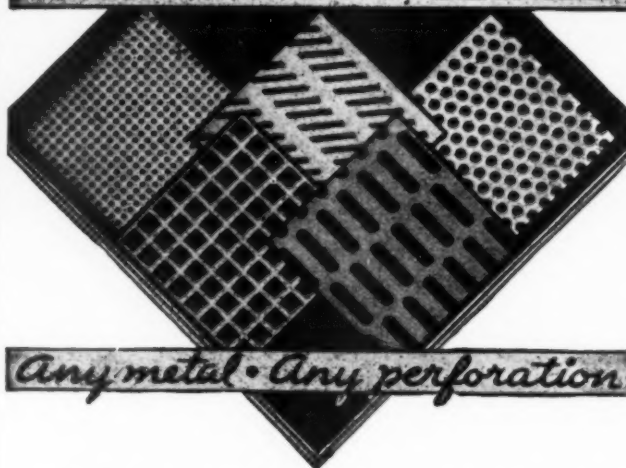
Gun-Type Burners

Taken as a whole, the low and high pressure atomizing gun-type burners were found to be the least critical to the composition of the fuel, of any type tested. However, here too it was found that improved performance could be obtained on catalytic fuels, and on prewar fuels for that matter, by closer control of the air-fuel mixture.

In the majority of cases in the field, the increased tendency of catalytic fuels to smoke as compared to prewar fuels can be overcome in gun-type burners by simply opening the fan shutter and supplying more air. However, this is the easy way out and not the most desirable. The excess air introduced lowers the combustion efficiency and thus tends to nullify the gains to be realized by virtue of the higher heat content of the catalytic fuel.

In making a special study of this problem, it was found that the design of the combustion head or air turbulator was the most important single factor influencing gun-type burner efficiency. By designing the mixing head so as to maintain high velocity air at a point where it enters the oil spray, a very intimate air-oil mixture could be obtained without greatly increasing the volume of air delivered beyond the theoretical amount required to burn the oil. By this means it was possible to burn a 100% catalytically cracked fuel at a zero smoke rating with 13 to 14% CO₂ in the flue gases. And under these conditions, it was impossible to detect any difference in burning characteristics between catalytic and straight run

PERFORATED METALS



Any metal • Any perforation

H. & K. Perforated Metals are accurately made and embrace a great variety of perforations for use in screening, grading, ventilating and straining of different substances.

Tell us your requirements and we will send booklet showing actual sizes of perforation.

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PERFORATING CO.**

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FURNACE PIPE and FITTINGS

DUCTS

• SMOKE PIPE

• FURNACE PIPE

• FITTINGS

See for yourself how MADE-RITE's "one-stop" source of supply helps you to more money and better installations. Precision manufacturing of Furnace Pipe, Duct Work, Smoke Pipe, and Fittings is the big reason for our established reputation. We'll help you select the right pipe or fitting for the job . . . and can, in most cases, supply ALL your needs with parts that will FIT the first time.

The address is below and all you have to do for more information on the precision manufactured "one-stop" source of supply for fittings, etc., is just drop us a postcard Please do it now.

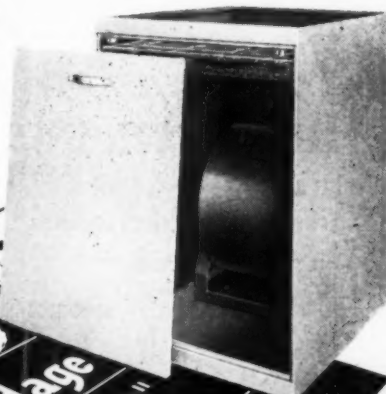
"Made-Rite"

FURNACE PIPE & FITTING CO.

10th and MONROE ST., NEWPORT, KY.

Now Ready!

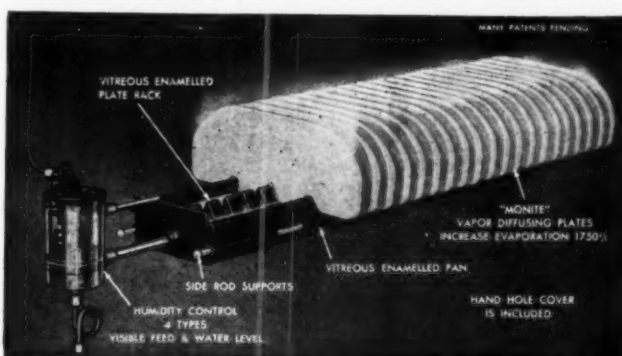
A BLOWER FILTER UNIT FOR SMALL HOMES



Compact to meet demand for conserving utility space.

This low cost blower package unit continues to maintain Brundage pre-war quality construction.

Complete set-up cabinet, equipped with Brundage blower assembly and filter.



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▶ DEALERS in all localities are enthusiastic about Monmouth Flotrol Humidifiers, because they mean easy, EXTRA sales, while you are selling, installing or servicing a warm air job.

One of the most important requirements of healthful heating is proper humidity. Every warm air system, new or old, needs a good humidifier. Efficient performance is assured by thousands of Monmouth installations. Correctly installed, a Monmouth Humidifier is a perfected, inexpensive device, which will give many years of trouble-free service. Use Monmouth on your jobs.

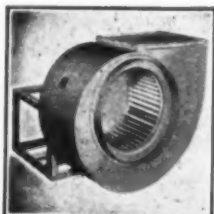
Full details and prices sent on request.

THE CLEVELAND HUMIDIFIER CO.

7802 Wade Park Ave., Cleveland 3, Ohio

YOUR BLOWER Requirements

AVAILABLE AT
Schwitzer-Cummins Company



★ BLOWERS FOR EVERY PURPOSE

Double Inlet and Single Inlet

HY-DUTY Blowers, 9 3/4" to 25" • Top and Bottom Horizontal, and Top and Bottom Vertical Discharge • Top and Bottom

Motor Mounting • Dual Units also available.

★ **CENTER DISC WHEEL**—Double Inlet, Double Width • Reinforced Center Disc • Designed for Modern Air Conditioning and Heating Applications • Sizes, 4 1/2" to 50".



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1125 MASSACHUSETTS AVE. • INDIANAPOLIS 7, U. S. A.

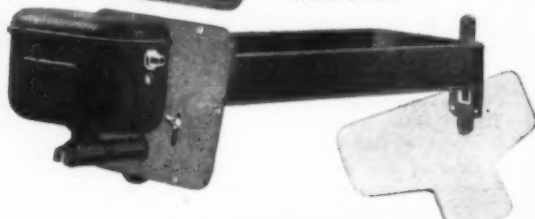
NEW SKUTTLE AUTOMATIC HUMIDIFIER Series 500

Large Inspection Door and frame may be mounted at any location on the furnace bonnet.



Adjustable Collar fits either sloping or vertical bonnets.

Drawn-Steel Pan construction is entirely without welding. No seams whatever.



Length of pan sizes are 12", 16", 20", 24" and 28". Fully adjustable to fit odd sizes.

For Greater Humidity, use the No. 590 Vapoglas Plates with the series 500 Humidifier.

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E. LARNED

Skuttle Mfg. Co.

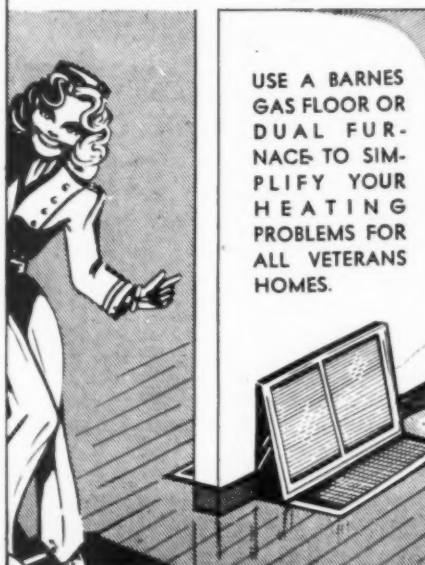
DETROIT
26, MICH.

materials, at burning rates as low as one gallon per hour.

While such advancements in burner design may be largely restricted to new burner installations for the time being, there are numerous other ways by which the performance of gun-type burners already in use can be improved. For example, the use of light weight, quick-heating refractories tend to suppress to an appreciable extent the smoke that is formed when the burner first starts up, before the combustion chamber gets hot. Careful selection of the atomizing nozzle as to size and spray angle, so as to avoid flame impingement and unnecessarily short firing cycles, also helps to insure smokeless combustion in burning the more highly aromatic fuels. The use of quick-closing cut-off valves, to avoid after-burning when the burner shuts down, was also found to be quite effective in reducing soot deposits and resultant loss in efficiency. In fact, tests indicate that any changes which were effective in improving the performance of gun-type burners on prewar fuels will be equally helpful in burning the fuels of the future.

All of which leads to the conclusion that as soon as the true facts, with regard to the advantages as well as the short-comings of catalytic fuels, are thoroughly understood by everyone, the obstacles involved in handling the new fuels satisfactorily in the majority of existing burners as well as in those of improved design will be surprisingly simple to overcome. But the only way this can be accomplished is for all parties concerned to make an orderly and earnest effort to ferret out facts that can be established by actual test data and to discard the various wild rumors which crop up from time to time, but which have no factual basis.

Something Really NEW!



USE A BARNES GAS FLOOR OR DUAL FURNACE TO SIMPLIFY YOUR HEATING PROBLEMS FOR ALL VETERANS HOMES.

For Veterans Homes

California Builders of G.I. Homes prefer and use Barnes Better-Bilt Gas Furnaces.

Because:

The Barnes Furnace requires no pit. Installation is simple. Constructed of heavier steel. Built with water tight pan on all duals. Has an attractive grille and a safety locking device on pilot and burner.



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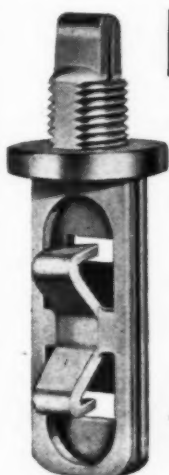
"Up a Tree" for FURNACE REPAIR PARTS?



A fellow could get awfully hungry if he stayed "up a tree" long enough, but you couldn't prove it by the dealers who order from Northwestern. They don't know what being "up a tree" for furnace repair parts is like. They're used to just telling us what they need, and when, the size and quantity and . . . we do the rest.

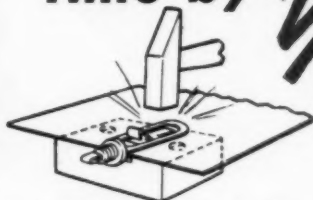
Last year we filled all orders, and this year we're in an even better position to repeat. Just get out after the business and let Northwestern's reliable service take care of your needs. Please write for literature.

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E-Z-ON DAMPER REGULATORS...

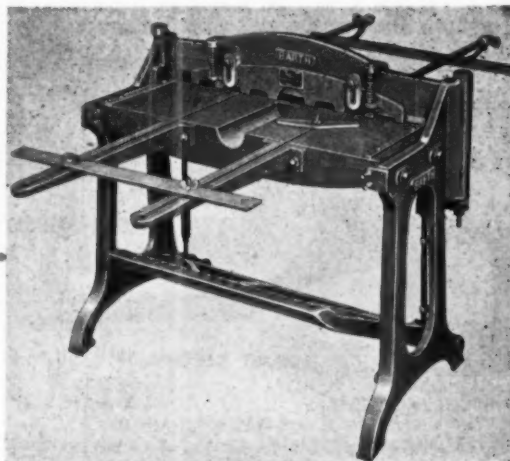
**Cut Installation
Time by $\frac{2}{3}$!**



At a quick blow of a hammer, E-Z-ON Damper Regulators punch their own holes and rivet themselves into rigid position on your damper—in ONE THIRD the time usually required! Visible centering saves time, too, in positioning, and combined with the E-Z-ON divided shaft, assures a perfectly balanced, rattle-proof installation . . . at lower cost.

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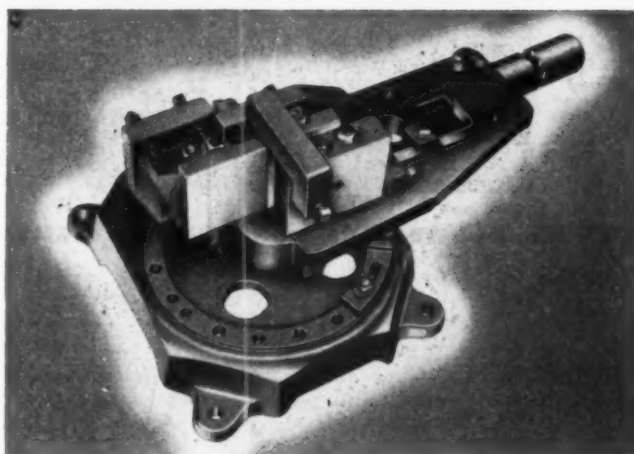
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JK NO. 4 BAR BENDER

JK Benders are offered in a complete range of styles and sizes to meet the requirements for duplicating a large variety of shapes. They are easily set up for either hot or cold bending and there is practically no limit to the scope of work they can handle. If you have a bending problem you can solve it with a dependable JK Bender.

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REDI-SET RIVET SQUEEZER



3 THROAT DEPTHS—1¾", 2½", 6".

THROAT HEIGHT (ALL SIZES)—2"
RIVETING PLANE MAY BE CHANGED
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CAPACITY—5/32" RIVET
JAWS REVOLVE 360°

No. 2 SHEAR



CAPACITY—1/8" MILD STEEL
LENGTH OF BLADE—3½"
WEIGHT—11 lbs.
LENGTH OVERALL—26½"

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91 FORBES ST. • ROCKFORD, ILL.



CHECK BLOWERS AND EXHAUST SYSTEMS with **The Alnor Velometer**

Air velocity can be measured directly and quickly with the Alnor Velometer. This convenient instrument gives you instantaneous direct readings in feet per minute, reliable check of exhaust system operation. Extension jets permit use in ducts and many other places inaccessible by other means.

The Alnor Velometer is built in several standard ranges, 0-200 to 0-6000 fpm, and up to 20 inches static on total pressure. Special ranges available up to 24,000 fpm. Write for velometer bulletin with complete description.

ILLINOIS TESTING LABORATORIES, INC.
420 NORTH LA SALLE STREET • CHICAGO 10, ILLINOIS

Kruckman— Washington Letter

(Continued from page 55)

structive to the overall regional and national economy to curtail commitments which involve many indirect dependent relationships. Reconversion Director John R. Steelman is regarded as slightly brash, and even more definitely amateur, in the practices of Government. When a sense of this kind prevails about an official in a high place he usually finds himself eventually in the position of Gulliver, who was bound down by the almost invisible thread of the Lilliputians. The resistance of the professional Government people can easily nullify the efforts of the well-meaning but inept amateur.

The Housing Picture

In this connection, it is regarded as daily more clear here that Wyatt has failed in his housing program. He makes the mistake of blowing up his statements beyond the real facts, and like the boy who called "wolf" too often, he now starts in most of his press conferences with two strikes of skepticism against him. In his latest verbal output he tried very hard to make a gloomy picture look bright, but the facts did not support his statements. He reported 496,000 housing units had been finished since January 1, and when the figures were even superficially analyzed it was clear most of the housing he claimed had been started last year before he had much effect on the program and most of the rest were trailers, reconverted barracks



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**ELGIN
ELECTRIC
A. C.
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RUGGEDLY CONSTRUCTED FOR LONG HARD SERVICE

Portability, convenient and simple heat control. The new series WB "ELGIN" A. C. Arc Welders produce a smooth flow of current for easy operation and flexible arc characteristics. Maximum efficiency at minimum cost. Models range from 20 to 250 amperes, 50 or 60 cycles. Write for literature describing our complete line.

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Furblo FURNACE BLOWERS

Furblo Blowers are especially designed for residential warm Air Furnaces, but the impeller wheel can be adapted to many other uses where volume of Air is required.

The equipment used with this Blower is of the best. Minneapolis - Honeywell Controls, Dustop Filters, variable speed V-belt drives, Long hour duty motors mounted in rubber, and meet all power requirements. The mechanical construction of the Blower is in keeping with this equipment.

There are many satisfied customers over the entire country. The quality of this product has been proven many times over the number of years it has been on the market.

Add this Blower to present equipment. In many instances this addition has increased the efficiency to such an extent that a new furnace was unnecessary. *New Furnaces are hard to get nowadays.*

Furnace manufacturers like our Blowers, but materials are hard to get for Furnace Construction. If you are interested in a good product let us know and we will help you out.

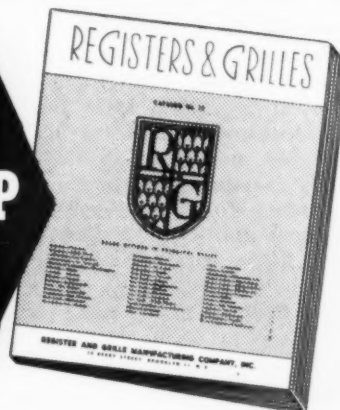
FURBLO CO., Hermansville, Mich.



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**FACTS
THAT HELP
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Now Ready!



R & G's UNIQUE, NEW CATALOGUE

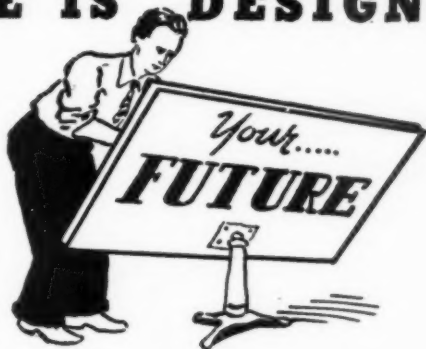
R & G's new catalogue does *more* than list and describe. One of its many unusual features: individual performance of face and shutter action on each Grille and Register is *actually shown*.

For the first time—air capacities, air deflection and control on each type of unit are clearly explained and *illustrated*. This *one* catalogue lists R & G's complete line of all types of Registers and Grilles for air conditioning.

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• If you are a **NORGAS** Dealer, he is designing your future. For **NORGAS** engineers are now in the final stages of development on a revolutionary gas-fired unit heater, gravity and forced-air furnaces, gas-fired boilers and water heaters.

• To **NORGAS** Dealers now enjoying extra dealer profits from the **NORGAS** Conversion Burner . . . these amazing new **NORGAS** developments mean an even brighter profit future.

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In Domestic and Commercial Heating**



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OIL
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**PERFECT
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EASY TO
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**ONE ADJUST-
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An exclusive patented feature is the double enclosure of glass and plastic. Another exclusive patented feature is the calibration assembly that prevents oil from seeping into the calibration dome.

Easy to install in all basement tanks, even when partially full.

Made at the factory to fit all tank sizes, and according to individual specifications.

**THE ONLY
NON-MAGNETIC
GAUGE LISTED AS
STANDARD BY
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Write for complete details
KRUEGER SENTRY GAUGE CO.
GREEN BAY, WISCONSIN

and similar "housing" units. He based his assertions of a "strong likelihood" that 1,200,000 units will be underway by next January upon the familiar and unsubstantial record of "starts," as well as a hollow record of prefabricated units, 200,000 of which have not even been "started." Wyatt glossed over the fact that since June 1 there has been a sharp decrease in applications for building priorities. They dropped from 125,000 in May to 45,000 in June. Wyatt still hopefully insists the veterans will pay a minimum of \$50 a month for rented apartments or houses, while all records and surveys show the average is between \$30 and \$40 a month, and they do not want houses. He reported the average cost of new houses during the first five months of the year was \$7,500.

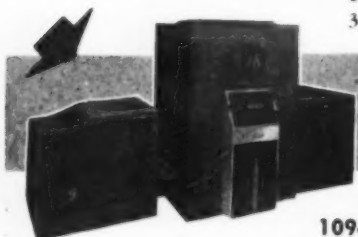
There is no doubt in the Washington mind that Wyatt fervently hopes the President will call the Congress back in special session. The Capital thinks

enactment of the Wagner-Taft-Ellender General Housing bill is the only hope for the Wyatt program. Congress went away with the distinct hint from Senator Barkley and Speaker Rayburn that they might be called back, either in October or November. The assumption is that, aside from the Housing Bill, Congress must clear up the OPA muddle and must enact the bill which raises the minimum wage from 45c an hour to 65c. Truman also wants Congress to give him authority to create a unified might out of our neighbors in South America by loaning them our skills and some of our money to build up their military organizations. The urgency for this armed hemispheric solidarity stems from the powder keg in China, as well as the situation in Europe.

The recently enacted law authorizing a huge stockpiling adventure under the direction of the Army and the Navy Munitions Board, headed by Richard R.

EFFICIENT HEAT *without* CLINKER NUISANCE in the NEW **Majestic** STOKER FURNACE

This smartly designed, rugged unit is tops in home-heating service, convenience, and economy. Special crown radial fins boost heat output. Inner can permits clean, easy clinker disposal. Any domestic stoker fits either side. It's a Majestic climax to 38 years' experience in heating.



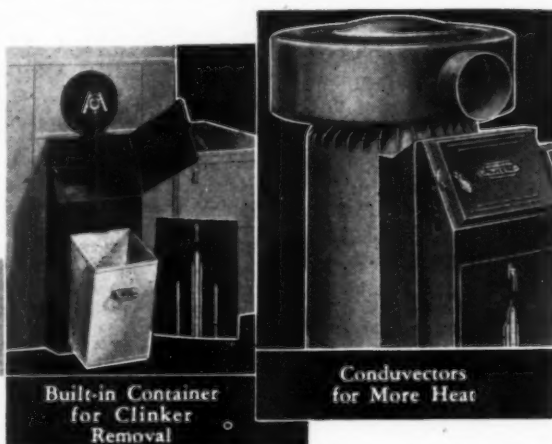
Made of HEAVY DUTY STEEL

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Built-in Container
for Clinker
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Bremil Two Sizes PORTABLE SHEARS

Your work will proceed faster and neater when you use Bremil Portable Shears on the job or in the shop. Write today for literature showing complete line.

ALL-ALLOY No. 2 cuts up to $\frac{1}{4}$ " steel plate.

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UNITED STATES REGISTER CO.

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Furnace pipe, adjustable elbows and
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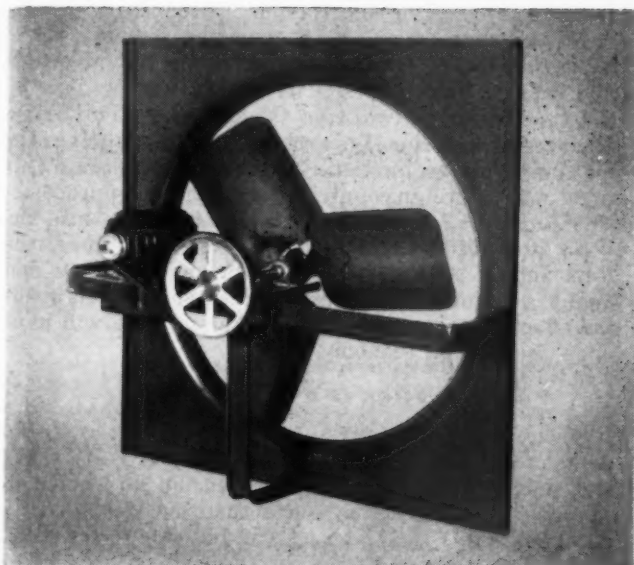
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Fundamentals are fully and clearly covered. Correct procedure in designing complete systems for both residences and large buildings is explained step by step. In addition, considerable original data on such subjects as standards, noise control, measurements, and fire protection codes has been included.

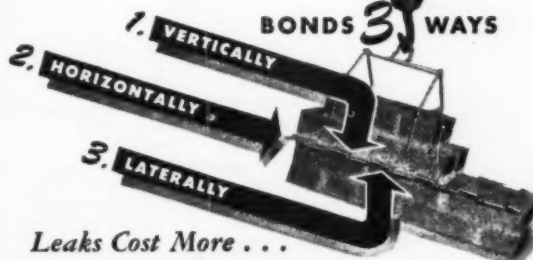
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Than Thru Wall Flashing

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CUT ANY SHAPE

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Here's just the Shear that offers every feature you want. It does hundreds of odd shearing jobs better and faster—yet is an inexpensive hand operated tool. No matter what type of cutting—either irregular shapes or straight splitting—from ANY size sheet, you'll quickly find that the Marshalltown Throatless Shear is the most profitable tool in the shop.



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*Wide Cutting Range!

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Each comes with 1 long, 1 short cutter.

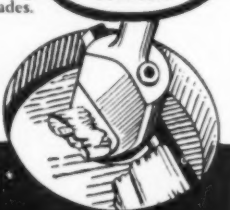
Ask your jobber, or write Bruno Tools,
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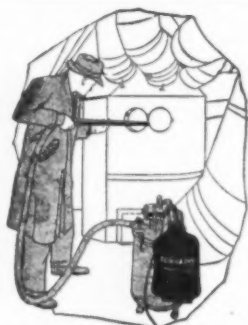
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With fifteen years of experience—Dahlstrom brings you added improvements in the finest constructed roll forming machines, to enable you to produce intricate jobs quickly, easily and economically.

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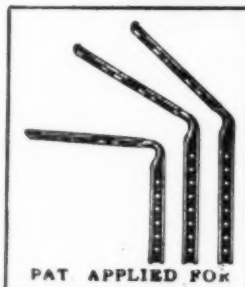
Deupree, of Proctor and Gamble, undoubtedly springs from the same urge. It is expected something like \$5,000,000,000 will be spent in acquiring raw materials and fabricated products. The buying will be done by the Procurement Division of the Treasury. The Army, Navy, and Interior Department are organizing the machinery of acquisition. Experts will ransack this country and foreign countries for the needed purchases. The Bureau of Mines is sending its experts into the West and into South America, the Philippines, the East Indies, Asia, Africa, Malaya and China to find metals and minerals. There is much speculation about the effect the creation of this huge stockpile will have upon the normal economy.

Scrap Is a Problem

Scrap metal still continues to be one of the bottle-necks of the steel industry. Surplus ships, guns, tanks and ammunition are being broken up to replenish supplies. Some mills have less than one day's supply on hand, and the average late in July was two weeks' supply. In some mills the men laid off on account of the summer heat. Early in August the CPA announced that 280 ships had been made available for scrapping to provide about 700,000 tons iron and steel scrap. If necessary the Government is prepared to feed a total of 1,280 ships into the scrap maw. The ships have outlived their usefulness. Commerce Department reported in August that the steel mills will not be able to fill all third quarter requirements. During the second quarter steel production came only within 31 per cent of capacity. In addition to scrap iron and pig iron, the program was slowed down by lack of coke.

Labor, employed to the fullest extent, envisioned

IMPROVED!



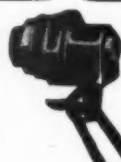
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No. 12 SHANK
33 $\frac{1}{3}$ % STRONGER

IMPROVEMENT IS APPLIED TO
No. 12—SQUARE, No. 12— $\frac{1}{4}$
PITCH, AND No. 25— $\frac{1}{4}$ PITCH.

SOLD THRU LEADING
JOBBER EVERYWHERE

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MOREY FLOAT VALVE

DESIGNED for Evaporative Coolers, small Cooling Towers, Stock Feeders and many other uses. Morey Float Valves are simple in operation, easy to clean. Made of corrosion-resistant materials. $\frac{1}{2}$ " pipe connection. Usual trade discounts. Send for sample. Distributors and Jobbers Wanted.

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SODERING HEADQUARTERS

FLUXES • SODER • PASTE

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EXPERT TECHNICAL HELP

LIQUIDS

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Forged
HAND TOOLS

Chisels, punches, drills, nippers and numerous other hand tools . . . quality built for long service. Sold by leading jobbers.

DAMASCUS STEEL PRODUCTS CORP., ROCKFORD, ILL.

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BRONZE HUMIDIFIER



Comes complete with tubing, saddle valve, hood, and patented adjustable overflow plates. Can be installed on any type or make of furnace.

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For modern winter air conditioning furnaces. The Zephyr is made in 2 sizes, 36"x4" and 26"x4". Stamped in one piece from 22 ga. genuine sheet copper bronze for greater heat transmission. Has patented wing deflectors for higher efficiency. Capacity to humidify up to 12,000 cu. ft. Humidifier fed by brass float valve mounted on one piece covered brass reservoir.

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For all
Furnaces - Boilers - Stoves
GUARANTEED TO FIT

Our stock of repair parts is complete at this time.
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Catalog and
Prices



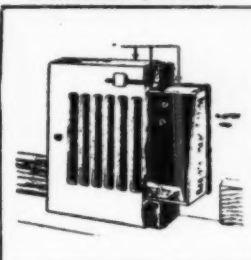
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BE WISE—
STREEKNOTIZE!



STREEKNO eliminates dirty, streaky walls due to air seepage thru open joints around register box and plaster wall—open joints between register box and register—open spaces under and back of the register.

STREEKNO Packing Seals all the Open Joints on all Sides and Bottom of the Register.

STREEKNO Register Packing is a resilient Rock Wool Product. It is guaranteed fireproof, rot proof, vermin and termite proof. Will not shrink or deteriorate. It fits any size register and lasts as long as the building.

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Material for one register costs 55 cents. You charge \$2.00 per register. Your profit for 10 minutes installing time, \$1.45 per register.

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STANDARD HAND BRAKE
ONE MAN OPERATION

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WELDERS

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For 7, 8, 9 & 10"
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Buy Adams Known Quality
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*Available
Now!*

CHENEY FLASHING
16 OZ.
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16 OZ.
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SEE
YOUR
JOBBER
OR
WRITE US—

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as part of the Full Employment ideal, just under 60,000,000, still is insufficient for current needs. It is anticipated there will be a lack of 2,000,000 workers in late fall. The situation is attributed to the fact that workers lack the drive that spurred them during the war. Many sources report that it takes two men to do the normal work of one. The present plan is to step up the labor lack by embarking upon overtime and holiday work and by calling upon many who passed out of the picture when the war was over. There is particularly a scarcity of women workers. Many offices report much difficulty in securing help. Also there is an urgent cry from all sections for skilled labor of all kinds. It is reported here the unions, especially the CIO, have given an informal pledge there will be no strikes until after the elections in November.

Future Prospects

We are told in the Capital that rising prices, heavy sales and extraordinary production are with us and immediately ahead. The galloping, ballooning times are generally expected to persist until early in 1948. Thereafter the wisecracks predict a sharp but short drop, sagging prices, credit squeezes, and a drop in consumer demand. This is expected to last only long enough to give us an opportunity to look around and adjust ourselves, then the rise is expected to start again and to last from three to five years. Construction, public works, and foreign trade are expected to check undue deflation. In the meantime, it is the technique to keep down inflation by production, by checking foreign trade, and by freezing public works until inventory pipelines have been filled.

The Tempscribe
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**INDISPENSABLE AID IN
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- SHOWS NEED FOR REPAIRS OR MODERNIZATION OF HEATING INSTALLATIONS!
- DEMONSTRATES THE HEATING COMFORTS THAT WILL RESULT FROM RECOMMENDED IMPROVEMENTS!
- SETTLES COMPLAINTS DIPLOMATICALLY AND KEEPS CUSTOMERS SATISFIED!

The TEMPSCRIBE Temperature Recorder makes round-the-clock records that show highest and lowest temperature for 24 hours, temperature extremes, and frequency of temperature fluctuations. Compact, self-contained; no electrical connection; requires no watching.

The TEMPSCRIBE can save your time and money on service calls—and build your reputation for reliable, expert service.

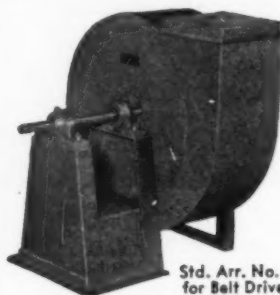
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**Also Available!
MOTOR OPERATION RECORDER**

... records on-and-off periods showing cycling frequency, length of running time, and percentage of heating capacity utilized.

National { Cole-Sewell Engineering Co., St. Paul, Minn.
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New and improved "EX" Fans are now available in standard sizes from No. 15 to No. 80 and from 200 to 30,000 CFM Capacity with pressures up to 15" W.G. These fans are commonly used for exhaust problems to handle dust, fumes, shavings, etc., but can be adapted for forced draft service.

"EX" Fans are furnished in all standard arrangements of the N.A.F.M. The design is such that it can be easily modified to suit special assemblies, thus "EX" Fans are ideal for resale purposes, as part of factory assembled units.

Write us about your problems. Send for Bulletin No. EX-41

BAYLEY BLOWER COMPANY

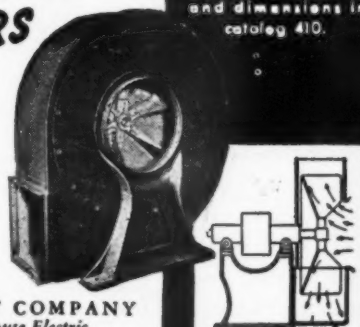
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Diagram shows special streamlined inlet that deflects air stream to reduce turbulence, lessen back plate erosion.

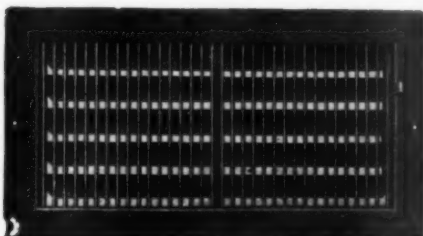
RESULT? Lower maintenance cost, less time out for service and repairs. Higher over-all efficiency.



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Air-Vane Registers are strongly constructed with vertical or horizontal vanes for right or left downward deflection of air flow. Multi-Louvre dampers for closing and 15 degree downward directional air flow standard. These fine registers are also available

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HEATING AND AIR CONDITIONING
EQUIPMENT



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You'll appreciate this when you back them up or fit them on the job.

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A Definitely Better SOLDERING FLUX

FOR STAINLESS STEEL AND ALL ALLOYS

Used exclusively by many fabricators of Stainless Steel and other metals. Flows freely without rolling up. Provides even coverage. Flows through lap joints without tinning before being lapped. Forms perfect bond. Has no strong corrosive action. Odorless—no injurious fumes. Sample for trial on request.

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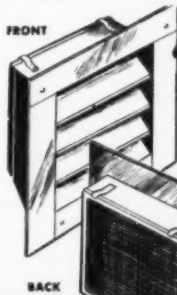
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Stationary LOUVRE VENTILATORS

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STANDFORATED
PERFORATION OF ALL METALS

REGISTERS and GRILLES

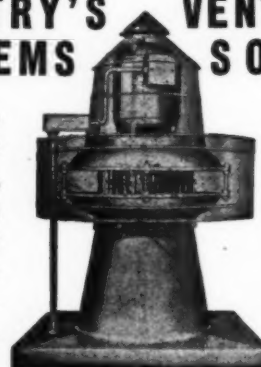
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INDUSTRY'S VENTILATING PROBLEMS SOLVED!

No belts to slip. Direct connected. Sets up on the roof out of the way of everything. A com-



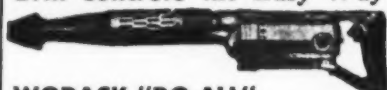
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Rubber Tires; 600 lb. Cap.; Height 44"; 5x2" wheels; 1" tube steel frame; roller bearings; easy rolling. For medium size appliances and refrigerators and for all general purposes. Not padded. Shipped same day order received. Return express collect if not highly useful to you. 1% 10 days. Order from HANDEE CO., Dept. R-161 Bloomington, Illinois

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WANTED—Shearings any amount—all sizes. Galvanized, cold and hot rolled aluminum. Stainless and copper 6" minimum width to 36" minimum length, uniform quantities. Gauges from 16 to 30 inclusive.

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"In the past twelve years Parker's have made a success of the installation of Warm Air Heating Equipment and Sheet Metal Work. The Display space has been somewhat enlarged and the company is now in the market as a potential buyer of Automatic Hot Water Heating Equipment in both Oil and Gas Heaters, also Space Heaters. Parker's will welcome being contacted by Manufacturers or Jobbers who are in a position, or will be in position to supply this type of equipment for present or future sales. Parker's, 115 42th Avenue, Rockford, Ill."

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Former sales manager of furnace manufacturing company is opening own jobbing business in St. Louis, Missouri. Is looking for warm air equipment lines. Has years of experience and is ably financed.

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THE COMPLETE DRIVE CLEATING MACHINE.

SAVES MORE TIME per joint of pipe, over ordinary hand methods, than any other machine used on square pipe work . . . and it is USABLE MORE OFTEN



per job, because it edges the pipe and makes drive cleats to join them together.

NOW TWO SIZES

NO. 12
Takes All Sizes Up to 12"

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Takes All Sizes Up to 18"

Write for More Information.

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GRAND RAPIDS FURNACE CLEANERS

Write for Details
DOYLE VACUUM CLEANER CO.

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WANTED—Furnace Salesmen for complete line of WEIR and MEYER Furnaces and Air Conditioners—coal, oil and gas, to call on Dealer Trade in Northern Indiana, Northern and Southern Illinois territories. Address Vice President, The Meyer Furnace Company, Peoria 1, Illinois.

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Two sheet metal workers (Jobbers) for year round employment with an old established concern in a community of 50,000. Work consists of furnace installation and maintenance, and general jobbing. Must be able to handle shop operations inside and out. Age limit 45 years. State experience, references, and availability in first letter. Address Key No. 644, American Artisan, 6 No. Michigan Ave., Chicago, Ill.

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Established manufacturer of heating and fuel burning accessories requires executive with electrical or mechanical engineering background. Exceptional opportunity with salary plus commission. Forward complete information concerning education, work background, etc., first letter. Address Key No. 642, American Artisan, 6 No. Michigan Ave., Chicago 2, Ill.

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1750 R.P.M.—Ball Bearing**
One or more—any quantity—any make! Wire collect, quoting price and quantity.
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One Horse Power Furnace Vacuum Cleaners, complete with eleven attachments\$89.50
Hasko Stainless Steel Nozzles with Strainers, best grade, accurate.93c
Hasko Fuel Oil Gauges, reading in gallons, for 275 gallon inside tanks\$1.60
Send for our list of oil burner and stoker specialties.

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IMMEDIATE DELIVERY — WHILE THEY LAST

**NEW NO. 6-C FAMCO 15-TON COMB. COM-
POUND TYPE ARBOR PRESSES:**
Floor type, Adj. table. List price.....\$324.00
SPECIAL PRICE, f.o.b. Chgo.....\$195.00 each

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DRILLS; 12"x13" oil gr. Table; No. 1 M.T.;
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**NEW 7 1/4 HP U.S. & STDRD. DOUBLE END
PEDESTAL TYPE DISC GRINDERS;**
18" disc; 1 univ. & 1 plain table. List price \$834.00
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Send for free copy of our "Machinery Mart"

NEW CINC. COMB. BUFFERS & GRINDERS:
one end takes a 1 1/4"x10" grinding wheel, other end has a 13" ext. arm to take buffing wheels; 1 HP. 3/60/220, 1750 RPM. List price.....\$209.00
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**NEW 3 HP. CLARK DOUBLE END PEDESTAL
TYPE WET & DRY GRINDERS:**
12"x21 1/4" wheel; 3/60/220. List price....\$450.00
SPECIAL PRICE, f.o.b. Chgo.....\$295.00 each

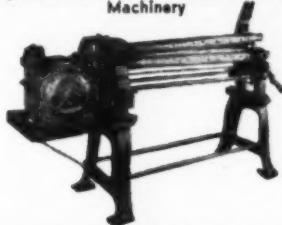
NEW 12" x 16 gauge LOWN POWER SLIP ROLLS;
with 2 HP 3/60/220 motors.....\$550.00

**NEW 36"x3" PEXTO & NIA HAND POWER
SLIP ROLLS, mounted on stand. List price \$314.00.
Our special price\$260.00**

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1433 W. PERSHING RD., CHICAGO 9, ILL.

In Stock — Immediate Delivery
Complete Line New and Used Sheet Metal Machinery



MILTON SLIP ROLL FORMING MACHINES

These machines are new and of our own manufacture. 10 ga. and lighter. 3' to 10' long. Compact, heavy duty, conservatively rated. Power or hand operation. Milton geared slitting shears—new—capacity 3/16 iron and lighter. Length of cutting blades 10 in. Dealer representatives wanted.

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REDWOOD CITY, CALIF.



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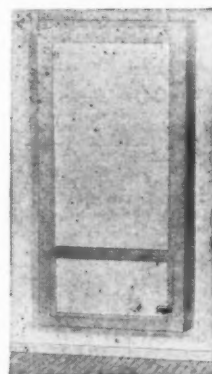
from your Wholesaler
Since 1909



*Reg. U. S. Pat. Office
Pat. Nos. 2,115,591 - 2,106,577

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The Williams WALL WARMOLATOR for new residences For Natural, Manufactured or Butane Gas



Dual type. 45000 B.T.U. input. Color, light ivory. Automatic temperature control with Wall Thermostat, or for manual control with pilot lighter. Easily installed —Working parts easily accessible. For 2x4 inch studs. No pit or basement. Approved by A.G.A. Eligible for F.H.A. loans.

Size of face, 25 1/4 inches wide, 50 inches high. Size of recess in wall, 23 1/4 x 48 inches high. Projects from wall, 4 inches.

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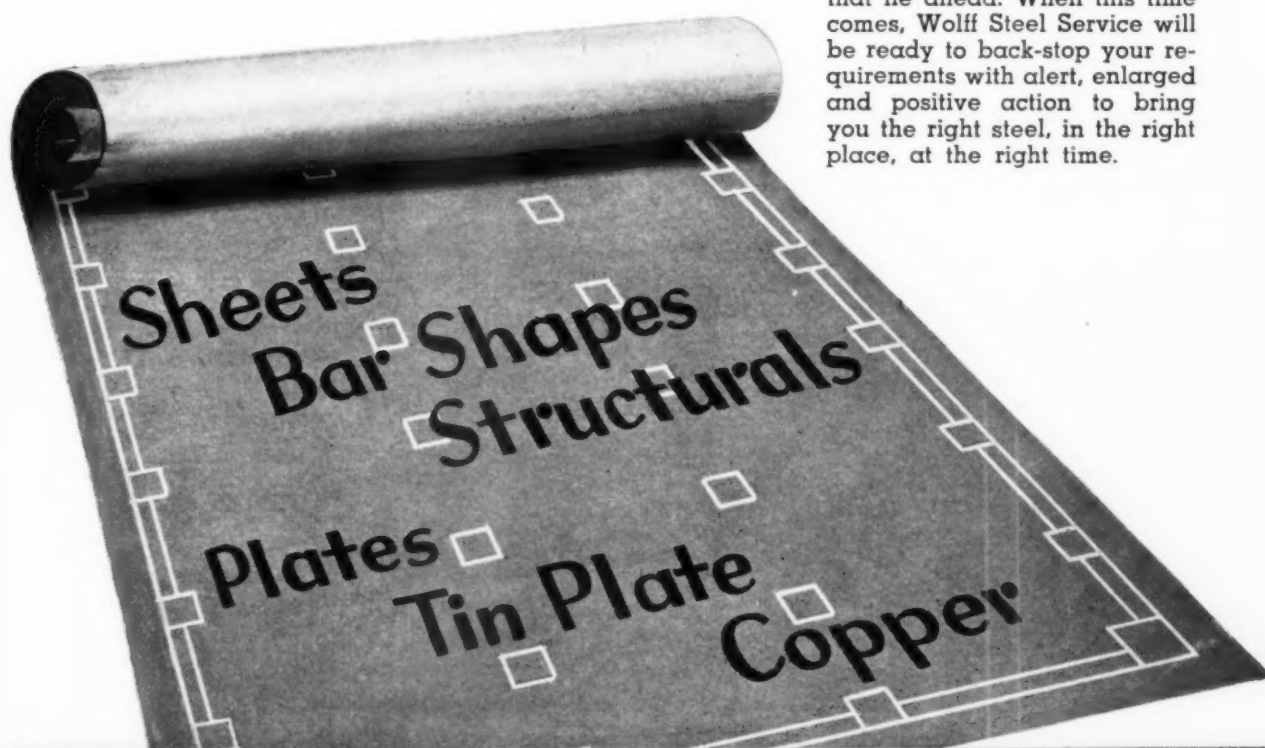
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